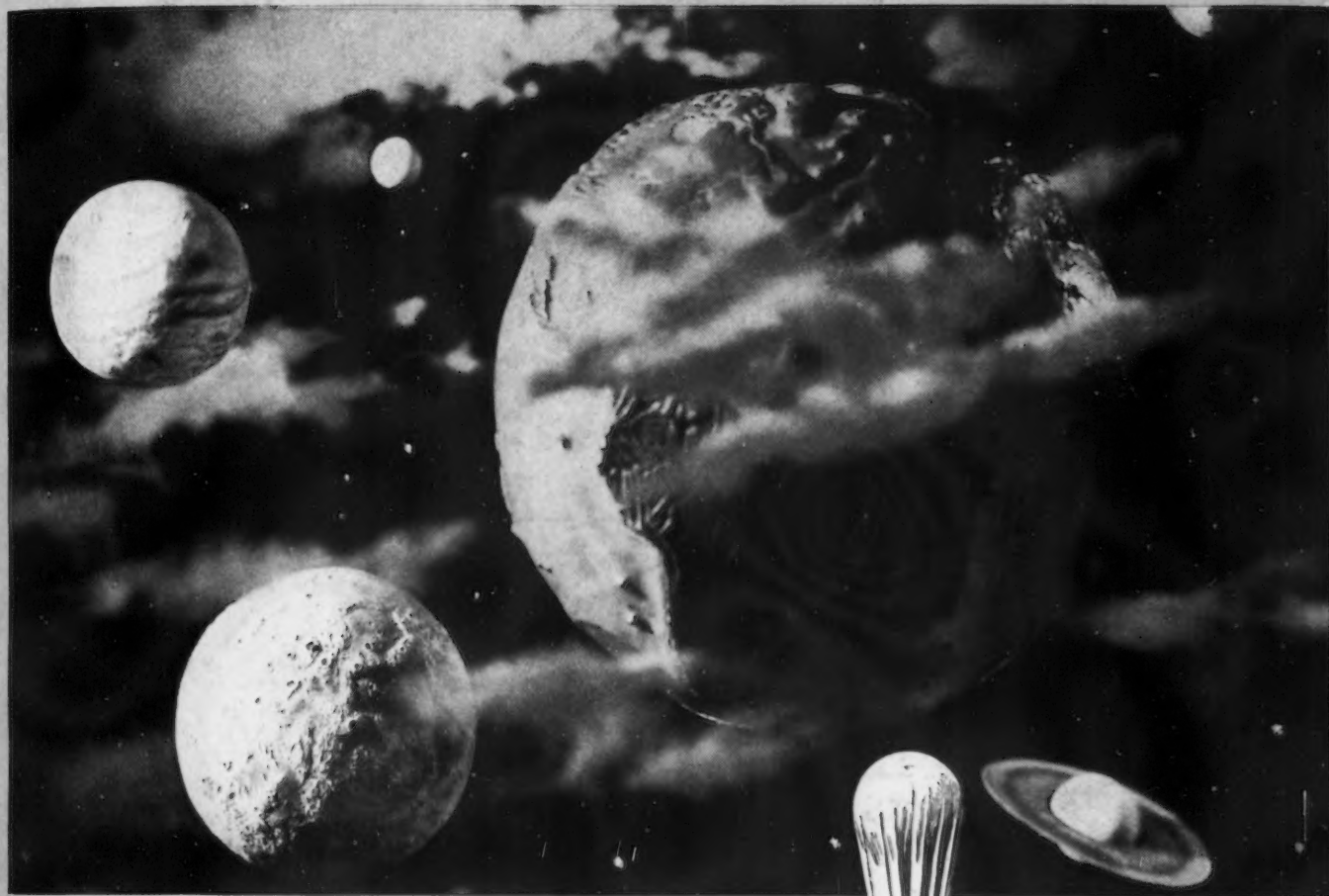


SEPTEMBER 24, 1936

SEP 24 1936

THE IRON AGE



No Other Form so Strong

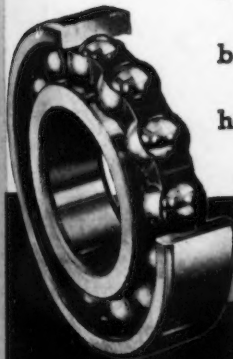
Nature invented the sphere—the strongest form—

but New Departure made it in steel, incredibly

hard and tough. The New Departure Mfg. Company, Bristol, Connecticut.

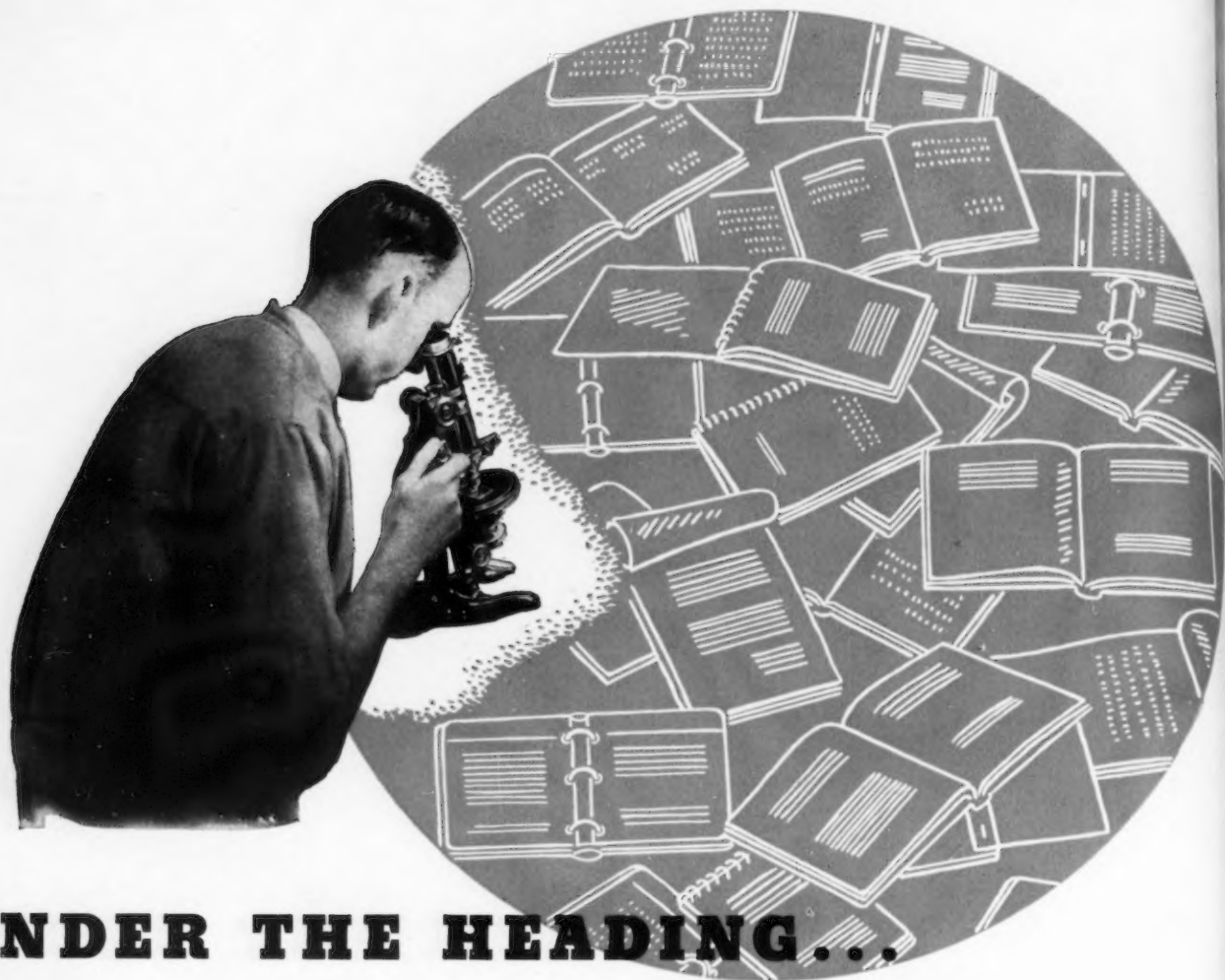


Scientists use the sphere for greatest resistance to pressure, i.e., for bathosphere, stratosphere balloons etc, etc.



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UNDER THE HEADING...

Economies in Application

In the notebooks of Republic metallurgists...in the records of Republic's Research Laboratories...are literally thousands of notes and reports that come under the heading, "Economies in Application."

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Republic Steel CORPORATION

ALLOY STEEL DIVISION, MASSILLON, OHIO
GENERAL OFFICES: CLEVELAND, OHIO

2—THE IRON AGE, September 24, 1936

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THE IRON AGE

SEPTEMBER 24, 1936

ESTABLISHED 1855

Vol. 138, No. 13

The Outlook for Business

BUSINESS prophecy is hazardous at any time and particularly when it embraces a long-range view under the uncertainties that prevail today. Yet the outlook for 1937 could be charted with some degree of assurance if natural forces of recovery were permitted to have full sway unhampered by the shackling influences of a national Administration bent upon governmental control of industry.

Confining prognostication for next year to the steel industry and those major lines upon which it depends for its prosperity, much satisfaction could be derived from the picture if the clouds on the horizon were dispelled.

A foreign war or the return of the New Deal Administration would definitely alter the views now held of a prosperous 1937. Our influence over the European situation is limited, but a well-informed American electorate can restore domestic confidence by its action at the polls in November.

Under favorable influences politically many industries would make rapid progress toward a degree of prosperity that would solve or greatly minimize the unemployment situation. The automobile industry, for example, is planning for an output of 5,000,000 cars and trucks, which would be a record, barring 1929. The railroads of the country would probably embark upon the largest rehabilitation program in years. Building construction, particularly in private work, would be greatly stimulated. The public utilities, removed from fear of hostile legislation and governmental persecution, would engage in long-deferred improvements. And investment capital, which now prefers absurdly low interest rates with comparative safety to the uncertainties of the present Administration's policies, would come out of hiding. What has business to fear?

President Roosevelt in his recent public addresses has implied the necessity of further Federal control over industry and agriculture; the alliance between the Administration and organized labor raises apprehension that success of the C.I.O. in organizing large industries would bring a renewed demand for a modified NRA with control over production, wages, hours and working conditions; there will almost certainly be a further attempt to impose a 30-hr. week on industry, which economists have declared would be ruinous.

How can these and other clouds on the business horizon be removed? As Governor Landon has said, "By restoring confidence in an Administration at Washington and by deciding that business and industry are to be free from the shackles of government dictation and management."

C. E. WRIGHT

*Managing Editor,
The Iron Age*

Steel Castings



By **RAYMOND L. COLLIER**
Secretary, *Steel Founders' Society*
of America

o o o



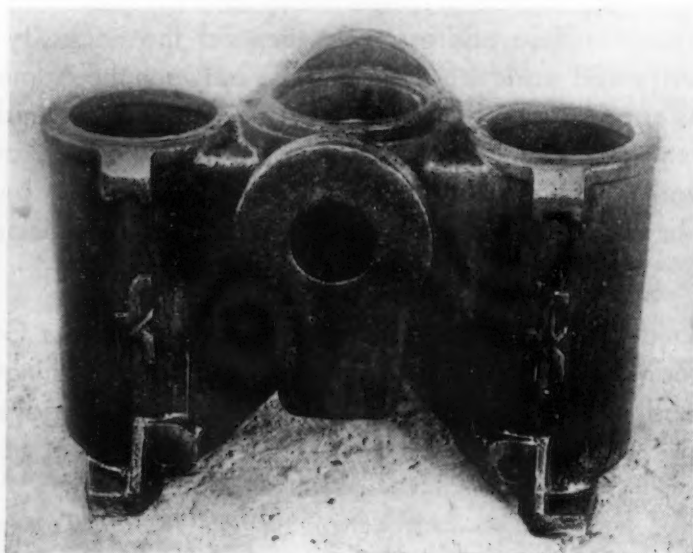
THERE has been a great deal of loose talk about welded structures replacing castings. Quite a number of engineers who have had only limited experience with steel castings have come to the conclusion, based upon hearsay and the exaggerated statements of over-enthusiastic proponents of welding, that the days of the foundry are numbered.

Well informed welding engineers as well as steel foundrymen and their customers know that this is not the case. They realize that welded constructions and steel foundings both have their respec-

tive fields in which they may expect to maintain their respective positions. They also recognize an intermediate zone lying between the two industries where each may prove to be the complement of the other.

There are relatively few cases where there is much doubt as to which method of production is the more economical to employ. The basic limitations of each process usually make such decisions relatively easy. As to the borderline cases, it is frequently found that the joining of castings to structural shapes by welding is the logical solution.

To illustrate the fact that there are certain structures that very definitely call for a casting, we submit a few photographs more or less typical of what the engineer can obtain from the foundry. In each

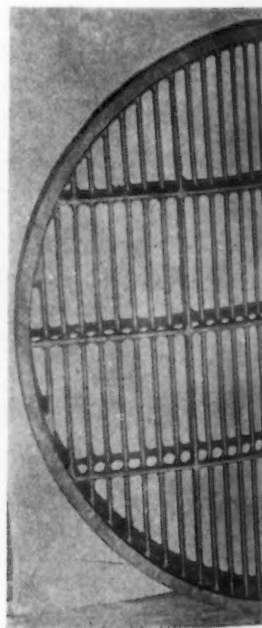


o o o

AT LEFT

VALVE BODY. Integral cast steel construction is the only economical method of making these complicated assemblies.

o o o



Move Ahead

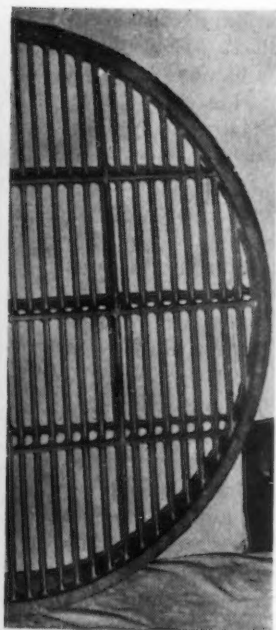
of the examples shown, imagine the make-ready and the extensive welding per unit of area which would be required to fabricate these shapes in the weld shop. Clearly these structures are best suited to production in the foundry if more than a limited few are, or some day, will be needed.

The examples shown are typical of literally tens of thousands of designs which have written all over them the fact that they can be economically produced in any appreciable quantity only by the steel foundry. In these applications steel castings have had a long record of continuous service without failure.

The production of steel castings has been increasing during the past three years. An industry can hardly be considered decadent which sold approximately \$53,000,-

000 worth of its products in 1935; which employed over 40 billion man hours of labor during the same year; and which carries on its payrolls some 24,000 employees.

Steel castings are being used in increasing volume because they are tough and can "stand the gaff." Where critically stressed members under dynamic load exist, there you will nearly always find a steel casting at work. The fact that the designer and engineer have such a wide range of physical and mechanical properties to choose from due to the various steels obtainable through alloying and differential heat-treating makes steel castings particularly attractive, since specifications can be drawn for the material best suited to the particular application.



AT LEFT

INTEGRAL Cast Steel Grating. No fabricating method other than casting lends itself to low cost production of this item.

o o o

AT RIGHT

CAST Steel Jacketed Elbow cut through to show integral structure. A typical casting job.



How Chevrolet



By J. B. NEALEY
American Gas Association

o o o



THE inlet and exhaust valves for the Chevrolet engine are made in the Flint, Mich., plant by extruding hot metal through dies. The steel comes in round bars and slugs of the right thickness for extruding and are cut from these. The steel analysis is as follows: Carbon 0.40-0.50, manganese 0.30-0.50, silicon 3.00-3.50, chromium 8.00-10.00 and phosphorous and sulphur 0.025. Stock for inlet valve is 1 1/4 in. in diameter while that for the exhaust valve is less by 1/8 in. This stock is heated to 1500 deg. F., and 15/16-in. slugs cut off in shears and smoothed up in tumbling barrels. They are then reheated to 2000 deg. F. and extruded and restruck in a 300 ton punch press equipped with two punches and one die.

Heating is accomplished in a battery of slot type gas fired furnaces consisting of steel cases lined with refractory and fire brick. Each is about 4 ft. in all dimensions, sets on 3-ft. legs and is heated with two gas burners, one located in the back and the other in one end. An automatic temperature control consists of a potentiometer actuating a solenoid valve in the gas supply line to the burners. This valve has a high and low setting and is on and off as the furnace heat is below or above the instrument setting. A shelf on the front of each furnace is an aid to handling the work while a hood and a perforated air pipe, just above the slot, removes most of the escaping heat that would otherwise adversely affect the working conditions.

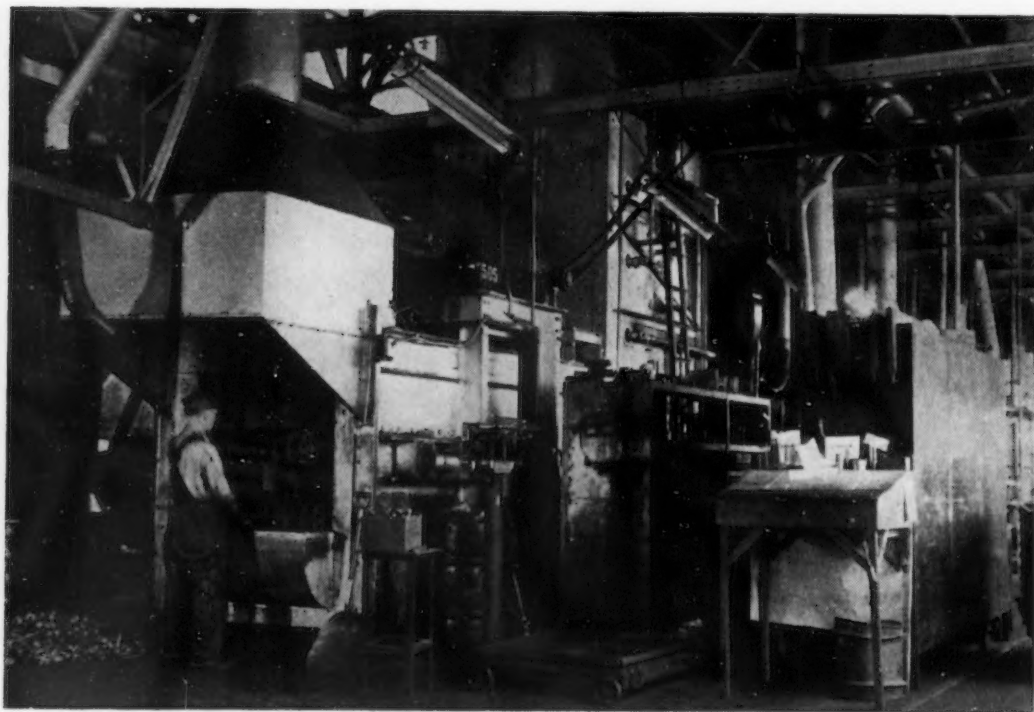
o o o

AFTER extruding, rolling and straightening, the valves are annealed in a counter-flow gas fueled furnace shown below. Then they are burred and ground to finish.

There are six presses and the furnaces and presses are arranged in two long rows with an aisle between. The heaters keep the furnaces charged and pass the hot slugs to the press operators. The extruded valves are tumbled in a tumbling barrel, reheated to approximately 1300 deg. F. and cut to exact length in a punch press. Rolled in a roll threader and bench straightened the valves are now annealed.

Counter-flow Furnace Gas Fueled

The annealing furnace is of the counter-flow type, L-shaped and gas-fired. It is used for rocker arms, valves and starter ring gears. The vertical or heating chamber is 3 1/2 ft. wide x 5 1/2 ft. long x 10 ft. high while the heat transfer chamber or horizontal chamber is 4 3/4 ft. high, 17 1/2 ft. long and of the same width. The side walls and arch of the heating chamber and the side walls immediately under the heating chamber consist of 9 in. of insulating fire brick backed up with 2 1/2 in. of refrac-





Valves are Extruded

tory insulating brick. The horizontal portion of the heat transfer chamber is lined with 9 in. of insulating brick while the floor is of 5 in. refractory insulating brick.

The complete unit is encased with $\frac{1}{4}$ -in. steel plate shell reinforced and supported by structural steel. The drive frame and base, also of structural steel, is built integral with the furnace frame and shell. The conveyor consists of two heavy cast nickel chrome alloy chains connected every 18 in. by alloy rods (1 in. in diameter) upon which the work hangs. Each rod projects 4 in. on the outside of each chain. The flywheel starter gears hang on these 4 in. projections while baskets and hanger plates are suspended from the rods, between the chains, by means of hooks. The baskets for the rocker arms are 6 $\frac{1}{4}$ in. deep x 10 in. wide x 13 $\frac{1}{2}$ in. long and are of cast alloy. The hanger plates for the valves are 3-story high, are slotted and will carry 196 valves each. The conveyor drive consists of a two horse-power motor.

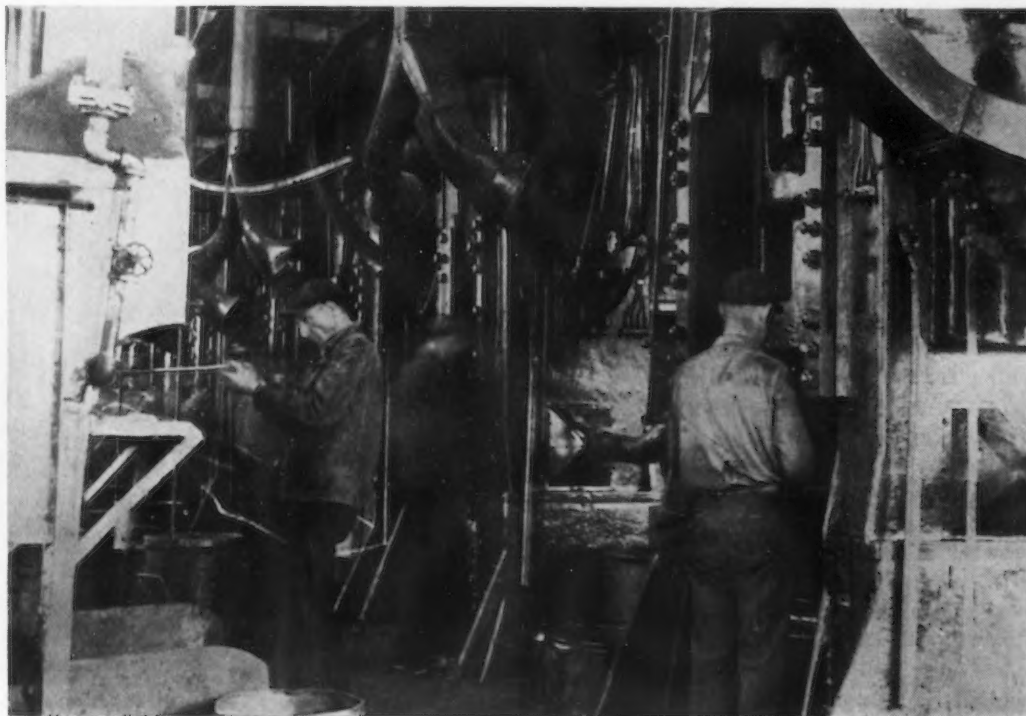
The furnace is fired by 12 gas burners, 6 on each side located in two vertical rows in the vertical section. These are divided between two automatic temperature controls consisting of thermocouples and potentiometers actuating solenoid valves in the gas supply lines to the burners. The work is loaded onto and removed from the conveyor at the open end of the horizontal section. The annealing temperature is 1480 deg. F. and charts of temperature variation in both zones are maintained by recording pyrometers. The capacity of this unit is 2000 lb. of work per hour made up of 800 lb. of rocker arms, 200 lb. of valves and 240 starter ring gears.

When cool, the head of the valve is burred in a disk grinder and the

HHEATING is accomplished in gas fired furnaces shown at the left. After the slugs have attained the correct temperature, they are passed to the extruding presses at the right.

CCHEVROLET motor valves are extruded from bar slugs at the Flint, Mich., plant. The methods employed in this interesting process are described by the author in this article.

stem is bench straightened and given three grindings on three separate centerless grinders. The seat is then finish ground in a Fitchburg grinder, the stem is finish ground to length in a rotary grinder, the groove is cut in a special grooving machine and the stem is finally finish ground in a centerless grinder. This completes the job.





Bonneville Sets t Pacific Coast

II-Economic Setting, C

By EDWIN H. HODGE

Consulting Geologist—North Pacific
Division, U. S. Engineers

o o o

This is the second article in a series of three in which the author outlines the possibilities of ferroelectric smelting on the Pacific Coast. The preceding article dealt with potential demand in the Coast Area for iron and steel products. A concluding chapter will show the available sources of limestone, magnesite, chromite and other materials. The first article appeared in The Iron Age of Sept. 3.

o o o

The surplus of investment capital in seeking new outlets should consider the Lower Columbia River Valley for the following reasons:

(1) Probably the "cheapest electric energy on tidewater in the United States" will be available.

(2) Growing industries will not be limited, because of the potential reserves of 22 million horsepower.

(3) Source of raw materials and most of market can be reached by a plant located on tidewater within a few miles of the power plant.

(4) It is located in the center of

the Pacific Coast market—Alaska to Mexico, and is nearer by miles and cheaper by cost to trans-Pacific markets than the older centers of production.

(5) Natural low level traffic routes reach the inland market.

(6) The Columbia River affords the only major harbor entrance in the 800 miles of coastline between San Francisco and Puget Sound. The proposed tidal industrial area includes the junction of the Willamette and Columbia Rivers, the 110 miles from the ocean thereto and 40 miles up the river to the Bonneville Dam, which is at the head of tide water on the Columbia River. Adjoining are numerous smaller streams and inlets. Adjacent are broad level tracts of land. The entrance to the tidal area is unusually safe and for 120 miles inland has a depth at mean low water from 48 to 35 ft.

(7) It is close to large supplies of raw materials that have not been in a competitive market.

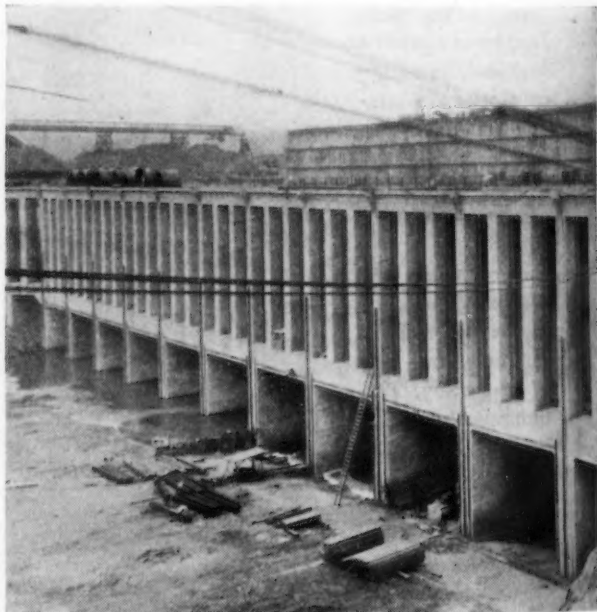
(8) Returning wheat and lumber ships will be cheaper carriers for raw supplies. The exports are three times the imports and the foreign cargoes cleared are six times those entered.

(9) The Pacific Empire, comprising all those lands bordering on the Pacific Ocean and having

two-thirds of the world's population, is gaining in commercial importance.

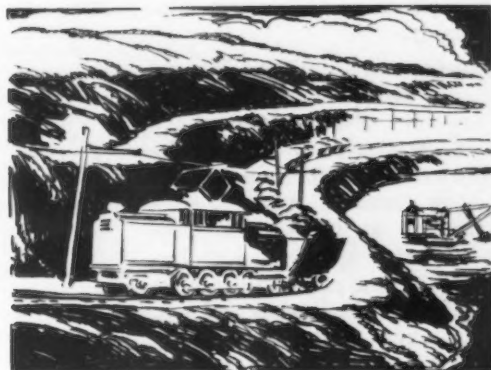
Material Supplies

Scrap. Apparently the two reasons why the Pacific Coast has been compelled to import more than 1,000,000 tons of ferrous products of the type that might be produced locally is (1) the high cost of pig iron, and (2) the necessity of using a large amount of scrap. The present consumption on the Pacific Coast of scrap to pig is 2 to 1 in contrast with the national usage of 1 to 2. In addition to the deleterious effects of the phosphorus, sulphur and rust and the high cost of smelting, the scrap is high priced. There will be available 1,400,000 tons of scrap. Hence the addition of one million tons to the



View of downstream side of Powerhouse sub-structure.

the Stage for a Iron Industry Ore and Coke Resources



present production will require 600,000 tons of new metal from ores.

Iron Ores. (a) The iron ores of the deposits recommended by this report are of a higher grade than those used by the nation as a whole. They average over 60 per cent metallic iron. Hence, on the above basis, there will be needed more than a million tons of ore a year, or more than 3000 tons a day. Hence the figure of 1000 tons a day requirement for cost figures in this report is conservative.

(b) There are many deposits of iron ore in the western part of the Americas. Some of these deposits are large but undeveloped and may become available a few years after an iron and steel industry is established. All such deposits have been located, considered, and are described in the report.

(c) Proven deposits within economic transportation range are the following:

(1) Kasaan Peninsula, Alaska, magnetite ore 60 per cent metallic iron, Bessemer, semi-self fluxing, low sulphur and copper, several million tons, three months to produce, 1000 miles water carriage, cost delivered \$4.14 to \$5.08 a ton.

(2) Louise, Texada and Vancouver islands, magnetite, 60-63 per cent metallic iron, Bessemer, semi-self fluxing, moderate sulphur and copper, several million tons, three months to produce, 710 and 440 mile water haul, cost delivered \$4.50 to \$4.15 a ton.

(3) Iron Mountain, Washington County, Idaho, hematite, magnetite, 57 per cent metallic iron, Bessemer, three million tons, one year to produce, 420 miles rail haul, cost delivered \$4.70 a ton.

(4) Dayton, Nev., hematite and magnetite, 62 per cent metallic iron, Bessemer, 1,500,000 tons, three months to produce, 310 miles rail and 650 miles water carriage, cost delivered \$4.75 a ton.

(5) Cave Canyon, San Bernardino County, Cal., hematite and magnetite, 60 per cent metallic iron, Bessemer, semi-self fluxing, 5-10 million tons, 225 miles rail, 989 miles water carriage, can be put into operation quickly, cost delivered \$4.32 a ton.

(6) Ship Mountain, San Bernardino County, Cal., 65 per cent metallic iron, Bessemer, many million tons, 270 miles rail, 989 miles water carriage, three months to produce, cost delivered \$5.14 a ton.

(7) El Tepustete, Baja California, Mexico, hematite and magnetite, 65 per cent metallic iron, partially

Bessemer, very large, three months to produce, 1185 miles water carriage, cost delivered \$2.50 a ton.

(8) El Mamey, Colima, Mexico, magnetite and hematite, 56 per cent metallic iron, Bessemer, 24,000,000 tons, four months to produce, 2180 miles water carriage, cost delivered \$3.60 a ton.

(9) Las Truchas, Michoacan, Mexico, hematite and magnetite, 63 per cent metallic iron, Bessemer, 50,000,000 tons, five months to produce, 2300 miles water carriage, cost delivered \$3.60 a ton.

(10) Marcona, Peru, hematite, 63 per cent metallic iron, Bessemer, 50,000,000 tons, six months to produce, 4850 miles water carriage, cost delivered \$4.30 a ton.

(11) Taltal, Chile, magnetite and hematite, 63 per cent metallic iron, Bessemer, 50,000,000 tons, six months to produce, 5284 miles water carriage, cost delivered \$4.05 a ton.

(12) Algarrobo, Chile, magnetite, hematite, 65 per cent metallic iron, Bessemer, 50,000,000 tons, four months to produce, 5494 miles water carriage, cost delivered \$4.75 a ton.

(13) Chenar Quemado and Dorado magnetite, hematite, 63 per cent metallic iron, Bessemer, both several million tons, six months to produce, 5500 miles water carriage, cost delivered \$4.25.

(14) El Tofo, Chile, magnetite, hematite, 64 per cent metallic iron, Bessemer, 100,000,000 tons, one month to deliver (operating), 5569 miles water carriage, cost delivered \$4.30.

Though it would appear from the reports available that about three of the above deposits were favorable as immediate sources for an iron industry, yet they are not specifically recommended.

The report locates all the deposits worthy of consideration for a ferrous industry. It recommends before feasibility is definitely established, such deposits should be examined so that costs can be determined and a group of deposits selected as the practical



Progress photograph of Feb. 11, 1936.

operating sources of the raw mineral supply.

Reducing Agents. There is a reduction of two-ninths of the weight and one-third of the volume of the load of carbonaceous material by using an electric furnace instead of a blast furnace. Also the electric furnace can use any carbonaceous material as long as it has good deoxidizing properties and is low in phosphorus, sulphur and ash. Any ordinary grade of coke, by crushing it, can be used satisfactorily from both a metallurgical and an electrical standpoint to produce any normal grade of pig iron.

Charcoal and petroleum coke is preferable on account of its greater purity and especially its freedom from sulphur and ash and a higher electrical resistance. The power consumption is higher with coal coke because of the extra amount of slag made.

Petroleum coke now finds a market at \$11 or more a ton and is limited to 40,000 tons per year. There is no reason to expect the quantity to be increased.

The supply of wood wastes for the production of charcoal is abundant, but due to direct charges and lack of a market for by-products, the lowest cost of charcoal that may be expected is \$9.00 a short ton. Hence coal coke is recommended because of its price advantage.

Coking coals occur in scattered deposits along the entire Pacific Coast and adjacent in inland areas.

Rank with regard to	Phosphorus	Fixed carbon and ash	Sulphur	General suitability
Crows, Nest, British Columbia	3	1	4	1
Crested Butte, Colo....	4	2	1	2
Union Bay, Vancouver 10	6	9	3	
Horr, Mont.	1	8	5	4
Cumberland, Wash....	5	5	11	5
Redstone, Cardiff, Colo. 8	7	7	7	6
Sunnyside-Castle Gate, Utah	6	3	10	7
Wilkeson, Wash.	2	10	6	8
Union, Cardiff, Colo..	7	4	8	9
Cokedale, Wash.....	11	11	3	10
Belt, Mont.	9	9	2	11

Oregon has only lignite and sub-bituminous coals.

The Crows Nest and Flathead fields yield the best cokes but the long haul cost, injury in transit and the duty (\$2.24 per ton) makes them too expensive for Bonneville's use.

The cokes from Washington coals are decidedly superior to the Alaskan and British Columbia cokes and are located close to Portland.

Wilkeson - Carbonado - Fairfax field, Pierce County, Washington, is the best available source of suitable coal for coking operations. Coke with 10 to 12 per cent ash can be made from this coal by careful washing. The cost has ranged between \$5 and \$7 and an average is \$5.75 per short ton.

Average Analysis of Wilkeson Coke	
	Per cent
Moisture	1.06
Volatile matter	1.30
Fixed carbon	81.44
Ash	15.20
Sulphur	0.45

The fixed carbon is high and almost equal to that of charcoal or petroleum coke. An analysis of the ash is:

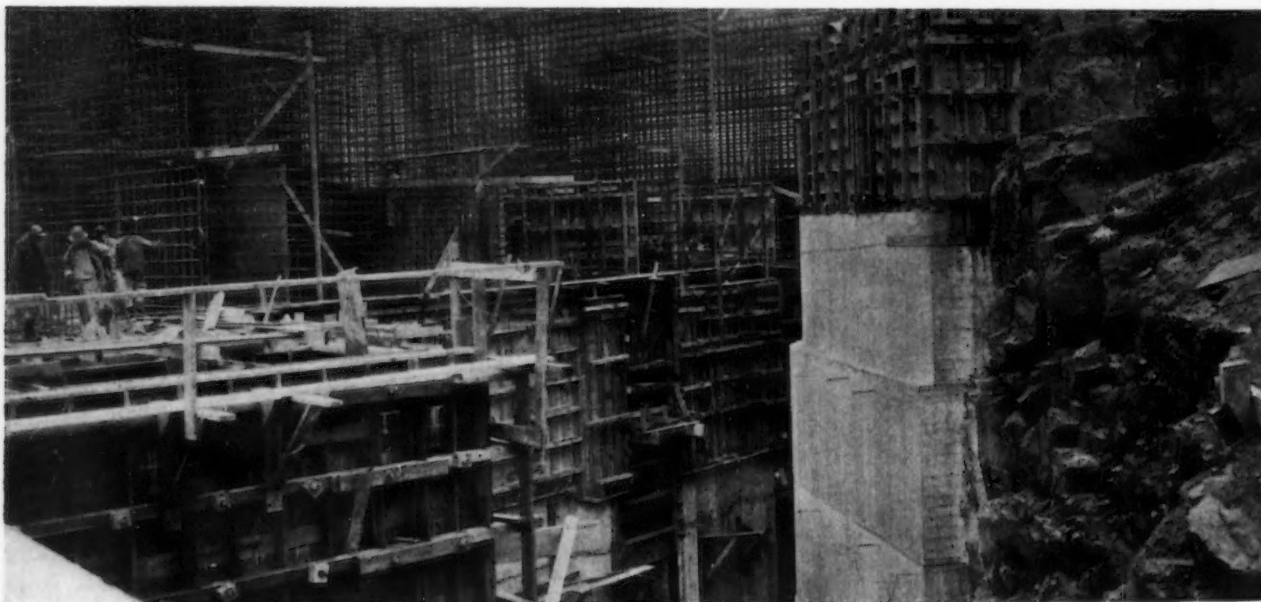
	Per cent
SiO ₂	51.60
Al ₂ O ₃	39.09
Fe ₂ O ₃	4.84
CaO	4.20
MgO	0.22
Mn ₂ O ₄	0.20
S	0.48
P ₂ O ₅	0.0607

The above coke is very low in phosphorus as compared with most cokes and contains only an average amount of sulphur. The silica is high and it will act as a flux with the iron ores recommended above. Its low crushing strength is no objection to its use. In a word, it is a good coke for electric furnace use. This coke should be delivered at Bonneville for \$6.50 a ton.

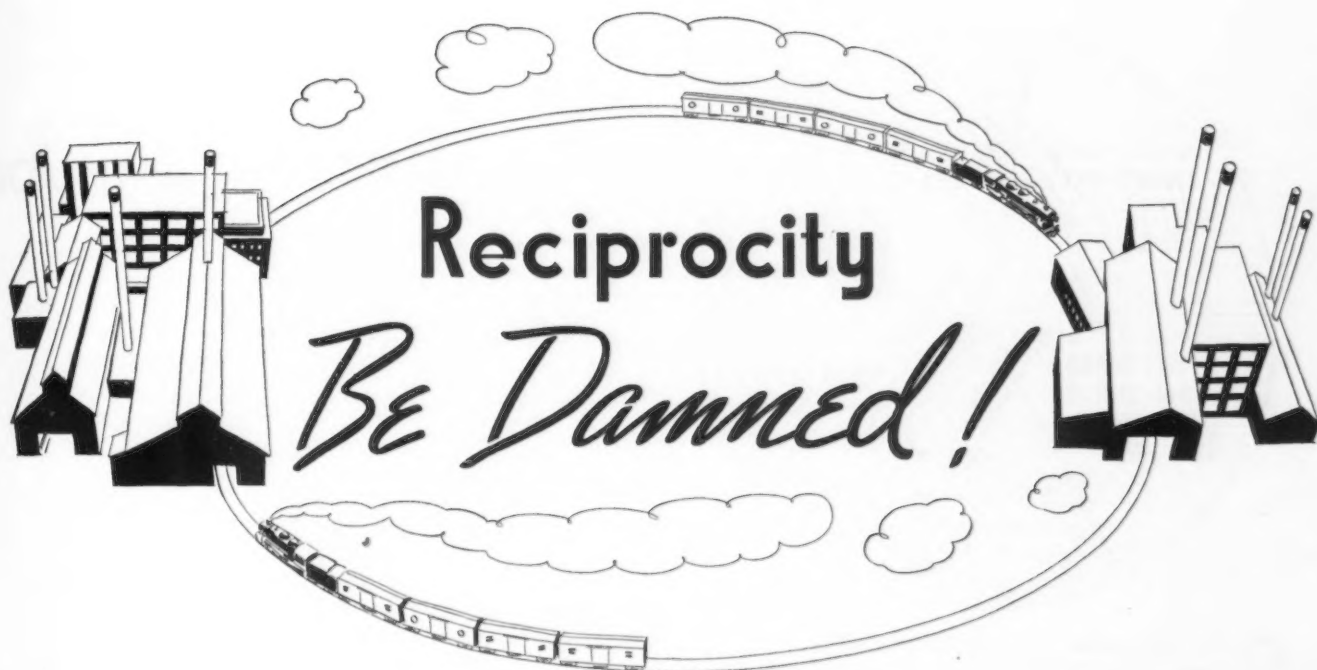
Foreign coke is not available to Bonneville because of the high import duty, long haul and indifferent quality of most of the foreign cokes. At one time cokes were imported in notable quantities, but that was before the development of the Puget Sound coal fields and before oil had attained its present prominence as a fuel.

The coking coals are briefly described for the purpose of indicating the possibility of trans-Pacific countries supplying their own market with pig iron and other ferrous products thus becoming formidable competitors.

(TO BE CONTINUED)



Fishway and elevator shafts between powerhouse and lock.



RECIPROCITY seems to be a subject that every business man abhors but accepts as inevitable, like death and taxes. One official hits the nail on the head when he says, "Of course, I hate it but I can't be the white haired boy who will hold righteousness above orders. I have employees and stockholders to think about and I can't let my competitors get ahead of me."

In my opinion, the only way the problem can be licked is for business to band together and resolve to wipe out reciprocity entirely. This suggestion may be five years ahead of the times because a lot of people do not yet realize what reciprocity is doing to the business structure of our country. No method has yet been devised to accurately measure the cost. In some cases, part of the cost is known. The balance, measured in terms of higher maintenance charges and lower operating efficiency, remains intangible. In time it will even make its mark on the personnel. Can't you hear the chief engineer say to himself, "There I went and had my boys make tests of those new valves and then the brass hats go ahead and decide to use the old makes anyway?"

On the other side of the picture is the salesman. In the case at hand the sales manager was elated because the decision was in his favor. In other cases to come there will be many times when the decision goes the other way. Is it

not logical to assume that most any salesman will do a better job if he is not hampered by reciprocity? The knowledge that he has a 95 to 5 chance of getting the order if he can convince the customer his company offers the best product at the right price, is in itself sufficient to make a salesman use every weapon at his command. The ab-

HERE is a short article that deals with a large subject, that of reciprocal buying. There is plenty of it in business today.

Naturally, the author writes anonymously, for he is a purchasing executive of a large industrial organization that does its share of reciprocal selling and buying.

Comments on this subject from our readers should be of interest.

sence of reciprocity would turn a lot of order takers into salesmen.

Looking once more into the crystal ball we see the formation of a "League for the Abolition of Reciprocity." Just as it seems inevitable now, so does a movement to abolish it appear inevitable some time hence. Reciprocity can not be tolerated for the simple reason that it is impractical and costly.

The joker in the whole deck is the fact that no company can buy as much as it sells, consequently it can never hope to satisfy the reciprocal claims of even a small number of its customers.

One of the best examples I know of is an industrial company which buys several carloads of nails each year. The company in turn sells to two classes of trade, manufacturing and jobbing.

On the manufacturing side every major producer of nails is clamoring for the business. The buyer is at "wits end" trying to satisfy or even appease them. On top of this, every once in a while, a large jobber gets the idea he should be able to supply the company with some nails. He will write in asking for special consideration. In some cases he may even threaten to take his business elsewhere unless he can sell some nails.

How pleasant it would be if we could go back to the horse and buggy days when most business was conducted on a basis of quality, performance and price. We don't advocate the elimination of confidence and friendship in business, that would be foolhardy. It will be a sorry day under any system when a man will decide against giving his former classmate an order providing the fellow has what he wants at a fair price.

If the league-to-be, that is the League for the Abolition of Reciprocity will consider the use of a rather strong slogan I respectfully suggest, "Reciprocity Be Damned."

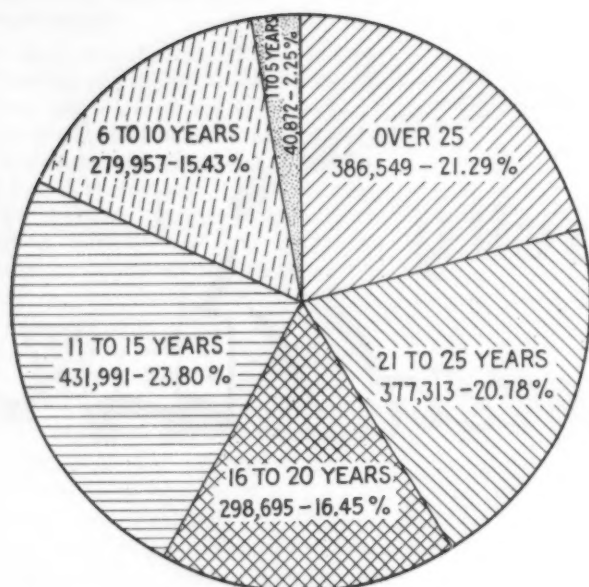


CHART prepared by American Railway Car Institute showing the ages of present freight-carrying equipment.

PROBABLY nothing short of an actual car shortage, which may develop this autumn, will satisfactorily determine the question as to how much equipment the railroads require to move the freight of the country under so-called normal conditions. Large shippers, among which the steel companies form a prominent group, are already predicting that a car shortage may develop by October, when the peak of the season's freight movement usually occurs. Railroad executives are said to differ among themselves as to how imminent a car shortage may be, even assuming that the fall movement should rise well above 800,000 cars weekly, as is at present expected.

Some railroads contend that the decline in rolling stock over the past few years does not necessarily indicate a potential shortage, although, of course, there may be shortages in certain types of equipment. Assuming that a heavy fall movement should occur at about the same time in crops, coal, iron ore, steel, pig iron and all of the general merchandise commodities, a shortage of certain types of cars might develop without indicating, some railroad executives hold, anything more than that certain classifications of cars need replenishment rather than the fact that the total number of cars of all classes, taken together, is in-

adequate for the country's maximum freight requirements. The railroads further point to the trend toward cars of larger capacity and locomotives of greater power and improved operating efficiency as partial answers to the contention that their equipment is not sufficient or well enough balanced to forestall equipment shortages.

Large Reduction in Cars

According to the annual statistical report of the Bureau of Railway Economics, Association of American Railroads, recently issued, there was on Dec. 31, 1935, a total of 1,835,736 freight carrying cars owned by Class I railroads, this figure making no allowance for bad order cars. At the end of 1929, a year of maximum freight movement, the same roads owned 2,277,505 cars, a net reduction during the six years of 441,769 cars. A significant feature is that more than half of this reduction occurred in box cars—a decline of 243,777 in the six years, and there was also a large decline in coal cars—135,214.

Bringing the figures down to a later date, the Association of American Railroads showed a total ownership of 1,768,741 cars on Aug. 1, this year. As bad order cars have recently been about 14 per cent of total cars owned, this indicates only about 1,521,000 as

Railroad Situation

By C. E. WRIGHT

the probable number of serviceable cars. The American Railway Car Institute in a carefully worked out analysis of the equipment required for various levels of traffic movement has estimated that 1,896,000 serviceable cars would be required for weekly carloadings of 800,000; 2,015,000 cars for 850,000 weekly loadings, and 2,133,000 cars for weekly loadings of 900,000.

But regardless of this point, which will be proved or disproved under actual conditions of increasing traffic within the near future, the fact remains that a considerable portion of cars classified by the railroads as in serviceable condition have reached the age of obsolescence. As of Dec. 31, 1935, about 760,000 cars, or more than 40 per cent of the total owned, were more than 20 years old and must soon be replaced.

40 Per Cent Over 20 Years Old

Thus, the railroad car picture combines two important facts that have a decided bearing on the purchases of rolling stock over the next five years—first, the railroads owned about 446,859 less cars at the end of 1935 than they had at the end of 1929, and, second, of those owned at the close of last year more than 40 per cent had reached or exceeded the approximate lifetime of a car, 20 years.

Railroad purchases naturally follow the trend of general industrial activity and their own traffic movement. The years of maximum traffic during the past 15 years were 1926, when a weekly average of 1,021,000 loadings was recorded, and 1929, when the weekly average was only slightly less, at 1,015,000. As the railroads operated with a high degree of efficiency in

Indicates Large Purchases

Of Cars and Locomotives

1929, when surplus and bad order cars were kept at a minimum and the average mileage per day was 32.3, an all-time record, that year is generally regarded as a basis for statistical measurements of probable future requirements if freight movement continues its present upward trend.

Despite the decreased number of cars brought about by obsolescence and lack of volume purchases in the past several years, the railroads are making a strenuous effort to provide a sufficient number of serviceable cars for whatever peak in freight traffic may develop this autumn. They have put through the largest repair programs in years and presumably have greatly reduced the number of bad order cars that had accumulated during years of light traffic. In their desire to avoid new capital investments as much as possible the carriers have concentrated on repair work, which, if not too costly, can be charged against operating expense under Interstate Commerce Commission rulings.

However, the need for new equipment has been recognized and has resulted in a fair amount of purchases, which are expected to increase over the remainder of the year. *Railway Age* computes purchases for the first eight months of this year at 34,254 freight cars, 141 passenger cars (excluding articulated streamlined trains) and 134 locomotives. These figures compare with 18,699 freight cars, 63 passenger train cars and 83 locomotives for the entire year 1935. In August alone orders were placed for 3225 freight cars, which was more than were bought in any one year back to 1930, when 46,360 cars were ordered. The Associa-

tion of American Railroads reports that on Aug. 1 Class I roads had 27,151 freight cars still on order, and presumably many of these will be in service in time to handle this fall's larger freight traffic.

100,000 New Cars a Year May Be Needed

Various estimates have been made as to the number of new cars that the railroads should buy over the next few years to bring their equipment up to the standard that would be required for another peak movement approximating that of 1929, which some observers believe may develop by 1938 or 1939. It is generally conceded that a serious car shortage would result if traffic increased to anywhere near that figure before railroads could add materially to their present equipment. The analysis of the American Railway Car Institute, previously referred to predicts that car shortages would be decidedly apparent under present conditions if weekly carloadings exceeded 750,000 over a period of a few months. In recent weeks that figure has been closely approached and some minor difficulties have arisen. For example, some tin plate mills have reported an insufficient supply of box cars for current heavy shipments, and there has also been trouble in obtaining enough open top cars in which a good many iron and steel products are shipped. Another sign of a tighter situation in car supply is the request of Eastern railroads that Western roads return empty box cars to them without reloading.

While the volume of freight car buying over the next few years will depend to a large extent on

the level of railroad traffic, it is contended by those who have made a close study of the situation that purchases of approximately 100,000 cars a year are indicated if the railroads are to be restored to a position of maximum efficiency for maximum traffic of the next boom period. This number would require fully 1,000,000 tons or more of iron and steel annually. The largest single item in car construction is plates, of which about eight tons are required for tank cars, about six tons for gondola and hopper cars and four tons for box cars.

Locomotive Shortage Also

Conditions that exist in railroad cars are paralleled in locomotives. At the end of 1929 the number of locomotives owned by Class I railroads was 57,571, but by the end of 1935 these had declined to 46,594. As of Aug. 1, this year, the number had further declined to 44,679. However, the trend toward heavier engines is shown by the fact that tractive power per steam locomotive had advanced at the end of 1935 to 48,367 lb. from 44,801 lb. at the end of 1929. Only 40 new locomotives had been placed in service during the first seven months of this year, with 85 still on order as of Aug. 1. *Railway Age* compilations show that 134 locomotives have been ordered during eight months of this year. In the entire year 1934 the total was 183 and in 1931 it was 176. Reports of a marked increase in locomotive buying this fall have not yet been officially confirmed by formal inquiries, but in both cars and motive power the trend of new purchases will undoubtedly be upward over the next few years.

A New Belt-Type Filter

By H. E. WOISIN

American Lurgi Corp., New York

FILTRATION, that is, the separation of solids and liquids is one of the many problems arising in the chemical industry that has to be solved most frequently. Among the numerous technical solutions—just to mention a few—are strainers, flat and drum type filters, suitable for each particular problem.

Within the last few years a new belt-type filter has been developed in Europe which seems to gain ground consistently. The design and uses of this filter are fully covered by U. S. Patent No. 2,034,784.

This filter consists of an endless belt traveling over two horizontal drums. The belt is made up of three layers: an endless rubber transport belt which carries a perforated rubber belt and on top of this a filter cloth. Underneath this belt are one or more suction boxes slotted in the top to allow the filtrate to enter through the perforations in the center of the transport belt. The filtrate is withdrawn from the bottom. The suction box is operated under a vacuum of approximately 600-650 mm. Hg. at very low power consumption due to the automatic sealing between the belt and upper edge of the suction box.

The suction box can be easily di-

vided into any number of sections. This division may be varied during the operation, allowing control of the concentration and the quantity of the individual filtrates.

The material to be filtered enters upon the belt near the left-hand drum and spreads evenly between its raised edges. The thickness of the layer is kept constant automatically by means of an overflow. It can be regulated up to 25 in. and above by adjustment of the first weir. This results in an increase in the capacity and keeps the filtration uniform by utilizing the principle of replacement. This is of especial importance if the liquid is to be recovered very concentrated, or when filtration is to be made in a number of steps by means of the counter-flow method.

In the latter case the new filter differs radically from the older drum type filters. Since the filter cake is traveling horizontally, it is possible to carry out precise fractional filtrations with various solutions or water on only one machine without danger of mixing the different solutions, or the formation of cracks in the filter cake. In such applications, a number of weirs are installed above the filter cake, across the entire width of the belt. These weirs are adjusted corresponding to the number and the

lengths of the desired filter sections to separate the concentrated liquor as well as the several solutions or water from each other. Since by this means the filter cake is continually covered with a liquid layer, it is impossible for cracks to appear in the cake which for instance are operating difficulties in other filters and lead to large losses in vacuum. This construction also makes it possible to wash the filter cake with a minimum of liquid.

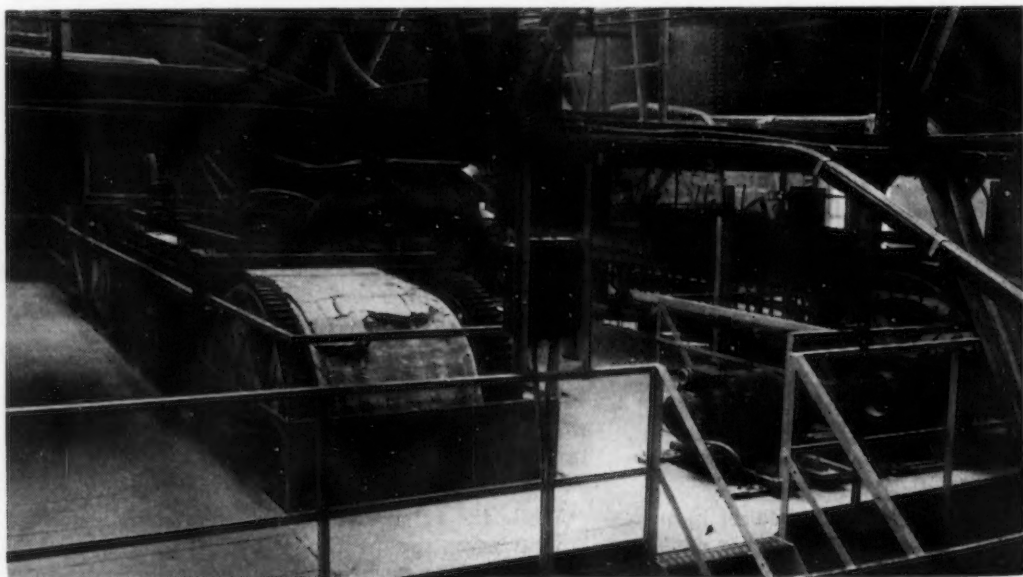
After filtration is completed, the filter cake can be subjected to a period of drying to reduce the moisture content to any desired value.

The filter cake is discharged automatically over the right-hand drum without the use of compressed air.

Due to the perfect seal between transport belt and suction box the consumption of vacuum is low. To maintain a vacuum of 600 mm. Hg. approximately 100 cu. ft. of air per minute are pumped from the filter with an effective suction area of 33 sq. ft. This corresponds to a power consumption of 6 hp. for the vacuum pump. The power consumption for operating the filter is also low depending of course upon the speed at which the filter has to operate. In general, approximately 1 hp. is the average power consumption.

After discharge of the filter cake the filter cloth travels underneath the apparatus and is there washed continuously with water or any suitable liquid. Thus the pores of the filter cloth are cleaned and the penetration is restored. The water or liquid used is not lost but is recirculated to the last section over the filter cake.

o o o
New type belt filter consists of endless belt traveling over two horizontal drums.
o o o



Drop Forged Manhole Covers

THE demands of industry for boilers and tanks of much higher pressures than were called for a few years ago have resulted in the need of manhole covers with increased strength to provide a higher factor of safety. Boilers capable of withstanding pressures of 2000 lb. or more per sq. in. are now being used, while not very long ago 125-lb. pressure for boilers was regarded as a high pressure.

Manhole covers have been made of iron and steel castings but those now most commonly used are of stampings that require crimping, welding, or riveting the bolt slot member to the top of the cover. For some high pressure vessels, manhole covers machined from solid steel are used, but these are necessarily expensive as compared with other types.

Drop forge manhole assemblies are a recent product of the Steel Improvement & Forge Co., Cleveland, which has devoted considerable attention to the development of new uses for forgings. These forged covers are designed to withstand the maximum boiler pressures of the present day and with the simplicity in the design of the cover and the production methods that are being used, it is stated that the cost of making the drop forged covers compares favorably with that of making covers of steel stampings, and the former have not only greater strength but are said to possess many other advantages.

The entire manhole cover is a single forging, the bolt bases for attaching the yokes being forged integral with the body. A center rib located between the bolt slots acts as a reinforcing backbone, increasing the strength. They are forged from 4 in. and 5 in. square billets and the twin yokes from round bars 2½ in. in diameter. The yokes are formed in T-shape to provide maximum strength and prevent distortion under the heavy strain exerted on the bolts. Highest quality A.S.M.E. forging steel is used both for the bodies and yokes. The pieces are forged on

THE entire manhole cover is a single forging, the bolt bases for attaching the yokes being forged integral with the body.



steam drop hammers, 6000 lb. hammers being used for covers and 3000-lb. hammers for the yokes.

Two standard types of forged manhole covers are manufactured. One, which is designated as a standard cover, is made in a standard 11 x 15 in. and other sizes and is designed for normal pressure operations and to meet all code requirements for pressures up to 300 lb. The other is a heavy duty cover 12 x 16 in., designed for high pressures. The standard cover is ¾ in. thick at its thinnest point and ½ in. thick in the flange. The corresponding thicknesses of the heavy duty unit are ¾ in. and 1 in. The standard assembly weighs 50 lb. and the high pressure cover weighs 110 lb. assembled.

The bolt slots on the high pressure cover are milled and the gasket flange is machined to provide a smooth bearing seat to assure a tight seal with a gasket. The flange is machined on a machine tool especially designed for machining an ellipse. No machining is required on the standard model, the bolt slots and gasket surfaces of this being smooth forged.

Advantages claimed for the forged cover include increased strength resulting from the hot working of the metal, thicker section and greater strength at the gasket shoulder where the greatest stresses occur, a comparatively straight side along the shoulder against which the gasket fits, elimination of leakage around the base of cover, close tolerances, a closely fitting unit and a high safety factor.

A series of tests was conducted to determine the maximum allowable working pressure on the standard 11 x 15 in. drop forged cover. These were made in accordance with the rules of the Bureau of Navigation and Steamboat Inspection, U. S. Department of Commerce, and those given in the A.S.M.E. boiler code.

A rectangular pressure vessel was used for the tests. The covers were placed over an opening provided in the top of the vessel and pressure was applied by hand operated water pressure pump. Measurements were obtained by several

(CONCLUDED ON PAGE 90)



EIGHTEEN 5000-BBL. TANKS COMPLETED IN ONE MONTH

THE 18 storage tanks here pictured were built in one month by the National Tank & Mfg. Co., Los Angeles, for the new Santa Fe Springs, Cal., refinery of the Wilshire Oil Co. All are 35 ft. in diameter, 30 ft. high and are identical in construction. Thickness of plate is $\frac{1}{4}$ in. in bottoms and bottom rings, and $\frac{3}{16}$ in. in sides and covers. Fast erection, as well as simplified fabrication, is attributed to the welded construction. The tanks are made up of pieces of steel plate, cut and formed and then welded into an integral unit without the use of intermediate connecting members. Approximately 3000 ft. of welding was required in each tank. Photo by Lincoln Electric Co.

New and Varied As the Camera

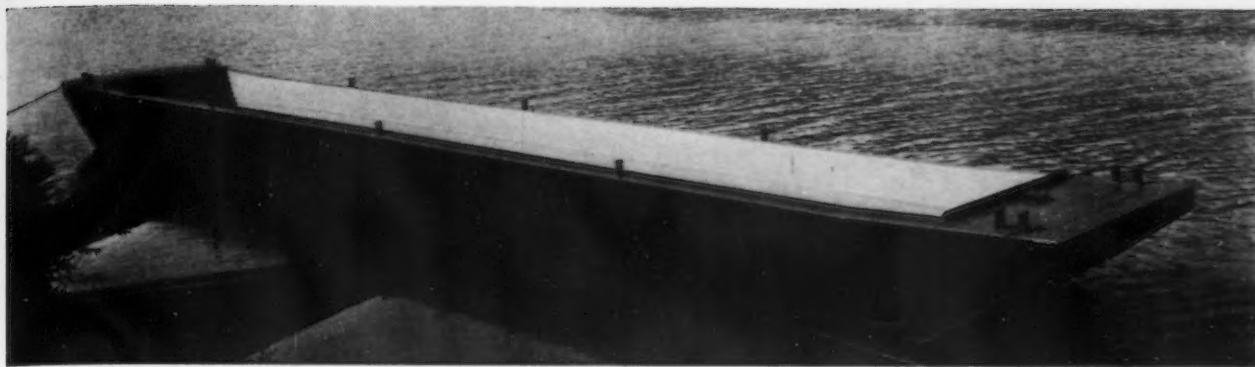
GASOLINE TRUCK TANK OF HIGH TENSILE STEEL

STREAMLINED in the modern motif and luxuriously finished is this gasoline carrier of the Mid-Western Petroleum Corp., built recently by P. W. Kennedy & Son, Indianapolis. Truck tank has a capacity of 1050 gal. of gasoline and is built of a high tensile steel recently developed by American Rolling Mill Co. especially for severe service in all types of transportation equipment.



BOEING BUILDING NEW AIRPLANE PLANT

AN airplane assembly plant 204 x 304 ft. with a clear height of 35 ft. and entirely free from partitions and posts and with an unbroken area of 2,100,000 cu. ft. is being erected at Boeing Field, Seattle, by the Austin Co., Cleveland, for the Boeing Aircraft Co. The building will accommodate nine giant 4-engine Boeing, No. 299, bombing planes fully assembled at one time.



NEW ALL-STEEL WELDED COAL BARGE

BARGE line operators on the Ohio River are showing great interest in a new coal barge constructed by Dravo Contracting Co., Pittsburgh. The new all welded steel coal carrier is 175 ft. long over all, 26 ft. beam and 10 ft. 8 in. deep. Its capacity, fully loaded is 850 to 1000 net tons. The welding method was carefully planned and required extensive and accurate shop fabrication; also sub-assemblies of various units as a part of the shop fabrication.

Uses for Steel Sees Them...

AMERICAN STEEL IN COLOMBIAN PATROL BOATS

AMERICAN plates in the form of patrol boats will soon be chasing bandits and smugglers in the waters of Colombia, South America. These boats are being built by Modern Engineering Co., Covington, Ky., and are unique in design, being 30 ft. long, 10 ft. beam and weighing five tons. They draw only 11 in. under average load. Armco hot-rolled plates, 3/16 in. thick, are used. All seams are arc welded. Motive power is supplied by Ford V-8 marine adapted engines. Speed is 15 miles an hour.



HERE'S ONE FOR THE BOOK! STEEL USED TO GROW HAIR

TO quote Mr. Ripley, "believe it or not," steel is now used for a new machine that is said to grow hair on bald heads. The machine, here illustrated, was designed by Dr. Andre H. Cueto, Cincinnati, and is manufactured by Crosley Radio Corp., same city. This development came about through the use of the same principle for the restoration of circulation in feet and legs, which disclosed that hair was made to grow on patients' legs. Ergo, a similar machine for restoring hair on bald pates. During clinical tests some 500 cases have been treated with positive results, it is said, in 95 per cent.





Harry E. Sheldon (in center) on the grand stand surrounded by members of his family and (at left) W. Frank Detweiler, vice-president of company

Harry E. Sheldon, Allegheny President, Honored by Civic Groups and Employees

HARRY E. SHELDON, who rose from a \$2-a-week apprentice boy to president and part owner of the Allegheny Steel Co., was signally honored on Thursday, Sept. 17, when the towns of Tarentum, Natrona Heights, Harrison Township and Brackenridge, Pa., where the Allegheny mills are situated, declared a holiday—"Harry E. Sheldon Day"—and paid tribute to a man whose civic work and benevolences have endeared him to his neighbors and employees in that industrial section of western Pennsylvania.

The affair was arranged and carried out by the business and civic leaders of those towns and fully 25,000 persons, from school children to oldest residents, participated. There were also many visitors from Pittsburgh and other cities.

It was an all day celebration, starting with an official reception in the morning in the high school building, followed by a parade, many miles long, with a score or more of bands and marching school children and mill workers. Another feature of the day's events was a nationwide radio hook-up consisting of speeches interspersed with music. Ford Bond was the radio announcer and talks were made by John B. Kennedy and Lowell Thomas, well-known radio commentators, to which Mr. Sheldon made a brief response.

Useful to His Community

"Whatever Harry Sheldon has done in this community," said Mr. Kennedy, "has been useful, for as a large employer he has recognized his right to the work he pays for, but also his duty to the workmen

he pays. This is the simplest rule of relations between employer and employed. It is the only true and persevering alternative to misrule on one side or the other. For community interest is the heart of social security. The community indeed is the safeguard against that other idea from the same root word to far from the same meaning—communism."

In his reply Mr. Sheldon said:

"This holiday and celebration is to me not so much a personal testimonial as an assurance that the close, friendly cooperation between us will continue. It is evidence that we have a fine community, good citizens and an industry which has tried for over 30 years to play well its part in community life.

"The efforts of everyone who has been connected with our company

in that time in mill, laboratory or office have been devoted to building an institution which is greater and more enduring than any of those who have participated in its making. I regard it as a monument to all who ever contributed the labor of their heads or hands to its advancement.

"I hope and believe that this community, its citizens and its industry, will continue in the future as in the past to solve their mutual problems together, whether it be the problem of increasing our usefulness, of caring for our needy and suffering or of resisting the ravages of a world depression or a spring flood.

"This spirit of cooperation will harm none and benefit all, from the Federal government which receives our tax payments to the children in our local schools. Let us devote ourselves to its preservation."

Testimonials Presented

As a testimonial from the associated communities, Mr. Sheldon was presented with a stainless steel plaque. S. M. Hazlett, representing the citizens' committee, pointed out that Mr. Sheldon's enterprise had brought more than \$120,000,000 in wages to the communities in 35 years and has furnished, with one or two brief interruptions, continuous employment for thousands of men in that time. The 7000 employees of the Allegheny Steel Co. presented Mr. Sheldon with a loving cup and the Tarentum post of the American Legion presented him with a certificate of distinguished service.

Mr. Sheldon is now 75 years of age, but is to be found every day at his office or at the mill. In partnership with Capt. Alfred Hicks he organized the Allegheny Steel & Iron Co. (predecessor of Allegheny Steel Co.) in 1900 with a capitalization of \$300,000 and served as its general manager until 1908, when he became president, which position he still holds. He was born at Freeport, Pa., in July, 1861, and was orphaned at an early age. He quit school when he was nine and took his first job. At 14 he became an apprentice in a machine shop at \$2 a week, and some years later started as a laborer at 90c a day in the sheet mill of Kirkpatrick & Co. at Leechburg, Pa., but soon rose to the skilled work of hammer man, roller and shearsman, and then to a succession of executive positions. He finally was appointed manager of the plant and continued in that capacity until it was sold to the United States Steel Corp. in 1900. It was then that he established the company which he still heads.

C. M. White Stresses Importance of Good Foremen in Industrial Plant

THE status and value of foremen in modern industrial organizations were discussed at length in a paper presented by C. M. White, vice-president in charge of operations, Republic Steel Corp., to the thirteenth annual convention of the National Association of Foremen, at Youngstown, on Monday.

Mr. White pointed out that one of the country's leading political commentators has stated that a political organization is only as successful as the precinct captains are able. Without the intensive work the precinct captains do

in their work and whether they were being fairly, decently, and honestly treated. If they did not like their jobs, they could quit. And if the foreman did not like a man, he fired him.

"Today things have changed. The foreman, instead of being a driver of labor, has become an executive. In the Republic organization, for instance, a foreman has an average of 25 men working under him. This compares with an average of 42 men employed in the average industrial plant. That means that a Republic foreman has nearly as many men to direct in his work as has the head of the average manufacturing plant. The foremen of today consequently must be responsible, capable men."

In describing his conception of an ideal foreman, Mr. White stated that a foreman must know in minute detail the mechanics and processes of all work for which he is responsible. He must be a leader of men. That is, he must lead, not drive them in their work. A foreman must be a diplomat. He must be tactful. Men do not respond and give their best efforts when simply receiving curt orders. They like to know why they must do things in a different way from that to which they have been accustomed. A foreman must not only know his job but the job of every man working for him. Unless this is the case, he can neither command the respect of his men, nor will the work for which he is responsible be properly done.

The ideal foreman, according to Mr. White, should know something about the broader problems of the company for which he is working. That is he should be able to answer intelligently some of the fundamental questions pertaining to the company's financial, sales or distribution problems.

A foreman should be sympathetic, and he should be ambitious.

According to Mr. White, "a substantial proportion of the labor troubles in industry can be traced to a lack of foremen of the type described. There is no more potent cause of strikes, dissension, and dissatisfaction on the part of industrial employees than foremen who still don't realize that their jobs require more thinking, less force, more executive ability and less bullying."

It was pointed out that some
(CONCLUDED ON PAGE 73)



C. M. WHITE

among the voters, no political organization, he said, could hope to elect its candidates.

According to Mr. White, the same reasoning applies to industrial organizations. In industry, the president and high executives may be individual geniuses in their various departments, and the superintendents may be men of skill, ability and training. However, unless the foremen who actually come in close daily contact with the men are of high caliber, the company will never be successful.

"There was a time, and not so many years ago," he said, "that a foreman got his job largely because of his ability to drive his men. He had to be a hard-boiled individual in order to be a first-class foreman."

"In those days, the majority of foremen cared very little about what the men thought, how they felt, whether they were contented

Rotating Steel Bins for Factory Use

MARKED savings in floor space, together with rapid issuing of materials and tools and simplification of in-

ventory and stock control, are advantages emphasized by the makers of the rotating steel factory bins here illustrated.



ROTATING steel shelving used in a tool crib for stocking small drills, taps, dies, and other tools at or near the counter.



A STOCKROOM installation of the Rotabin equipment. Savings in floor space and quick access to the stocked materials are features.

Termed Rotabins, this equipment is made by the Frick-Gallagher Mfg. Co., Wellston, Ohio, in a variety of styles and sizes from 16-in. diameter bench units to 58-in. diameter bulk storage bins handling 50 kegs of nails or similar material. Each shelf section rotates independently, and in either direction, on a ball bearing assembly. Floor space savings up to 50 per cent are attributed to elimination of aisles and wastage of compartment space as compared with the usual straight shelving. The size of any compartment on one rotating shelf may be adjusted conveniently without interfering with other shelves.

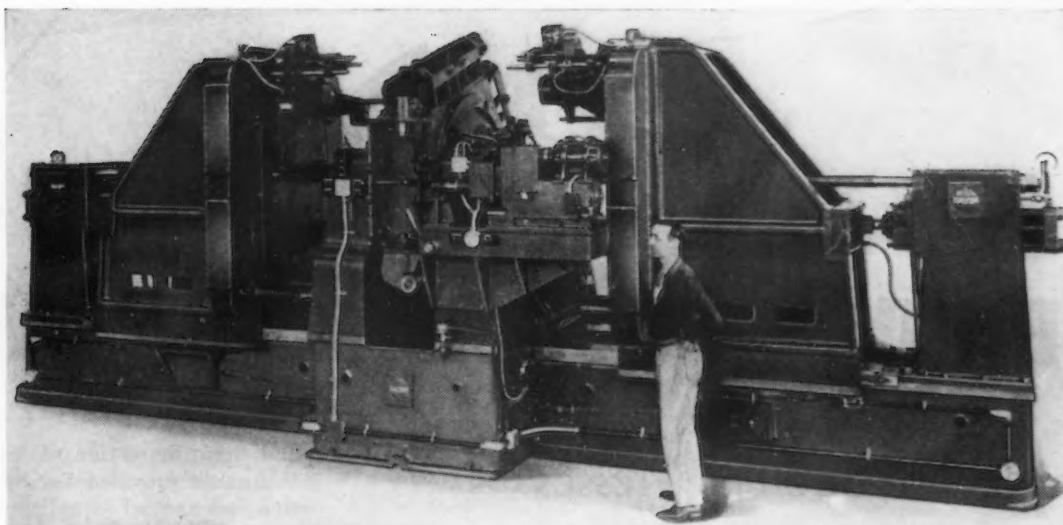
A broadly adaptable model of the Rotabin is the series RB28 which is made up of ten 28-in. diameter shelves and is 65½ in. high overall. This series is furnished either with 60 adjustable compartments, 14 in. wide at the face, 120 compartments 7 in. wide, or 240 compartments 3½ in. wide at the face.

Flexibility is a feature: Dividers may be adjusted quickly and bin fronts, of boltless type, may be removed without the use of tools. Drawer units, pans, tool inserts, block drill and reamer holders and other accessories may be inserted in any shelf, and strip tool check hooks can be supplied to fit in label holders.

The bulk storage steel bins of the same general type, for nails, rivets, bolts, washers and other keg items, are made in seven different sizes, with from three to six sections and 15 to 50 compartments.

Van Norman to Build And Buy Equipment

VAN NORMAN MACHINE TOOL CO., Springfield, Mass., has acquired the A.F.F. Machine Works of San Francisco, manufacturer of brake drum lathes and grinders for the automotive trade, and will move the equipment to Springfield where a two-story, 160 x 50 ft. plant addition will shortly be erected. The Springfield company is to issue 72,345 shares of common stock, of which 33,315 shares will be sold and proceeds used to retire outstanding preferred shares and pay for plant addition and installation of equipment. The remaining 39,030 shares will be sold to present stockholders. About \$100,000 will be used for the construction and expansion of plant and for equipment. The addition to the plant will cost about \$40,000 while about \$60,000 will be used for the purchase of machinery and equipment.



Drum-Type Equipment for Automotive Work

A LARGE drum type machine built by Baush Machine Co., Springfield, Mass., as here shown, completely drills, countersinks, reams, counterbores and automatically taps all holes in oil pump and distributor pads on a six-cylinder automotive block. It also spot faces the oil pump pad at the loading position. Machine weight is approximately 70,000 lb. Design is described as two-way,

fully hydraulic, center feed and ball bearing throughout. Assembly is described as of welded steel heavy section bases and heads with heavy section cast iron angle supports to heads, with heavy ribbed cast iron saddles. Operation is electrically interlocked with single push button control. Right- and left-hand heads, in conjunction with two fully automatic units, handle

the distributor and pump pad holes.

Five station trunnion fixture is hydraulically indexed, and fully interlocked with all units. There is a 30-in. radius for drilling. Hydraulic cylinder brackets tied together by means of a 3-in. tie bar gives rigidity to the mounting of two hydraulic cylinders.

Production: 55 to 60 blocks per hr.

o o o

A FIVE station drum type unit machine here illustrated finishes, from the rough, all valve and tappet holes as well as the core drilling in the thrust and four water holes of an automobile cylinder block. The machine is built by Baush Machine Tool Co., Springfield, Mass. Its total weight is 73,000 lb. The assembly consists of heavy section welded steel bases and heads with heavy section cast iron angle supports to heads and heavily ribbed cast iron saddles. Two heads move horizontally upon a saddle plate; the right-hand

fixed-center head houses 48 spindles, and the left-hand fixed-center head 40 spindles.

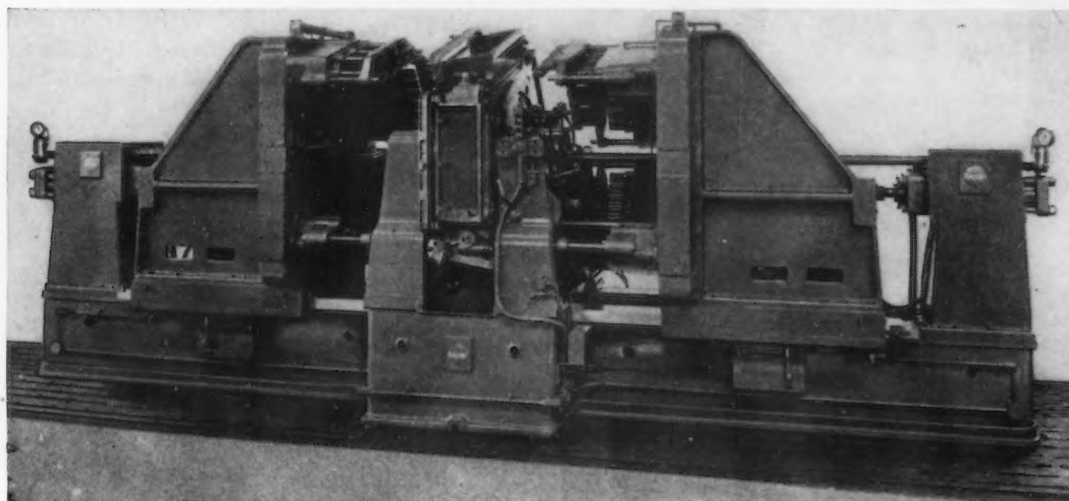
Each spindle is mounted in a 5605 single-seal double-row bearing with one 30205 back of the double row to take the thrustload.

The five station trunnion is hydraulically indexed. Hydraulic cylinder brackets are tied together by means of a 3-in. tie bar for rigidity.

The left-hand head carries a 25 and the right-hand head a 30-hp. motor, with two 5-hp. motors driving the hydraulic pump and one

3-hp. motor operating the hydraulic index.

Including the spindle bearings, the machine contains 310 New Departure ball bearings and 230 Hyatt roller bearings, for reducing power requirement to an extent said to equal 20 to 25 per cent. Total power required to turn the head over when idle is about 1½ hp. Each head is capable of withstanding a load of approximately 35,000 lb., each spindle having a thrust capacity of 4500 lb. Production is stated as 55 to 60 blocks per hr.





IMPROVEMENTS IN PRODUCTION

Hydraulic Die-Spotting Presses Reduce Breakage

HYDRAULIC die spotting presses for disclosing inaccuracies in surface contours of dies employed in drawing automobile members, steel plate stampings, etc., are announced by the Baldwin-Southwark Corp., Philadelphia. Advantages emphasized include faster and more delicate closing of the dies with assurance against die breakage.

In the event of operating power failure, a restraining valve in the lower inlet of the cylinder locks the hydraulic fluid in the system and the platen cannot move, even

though the operating valve may be in the down position.

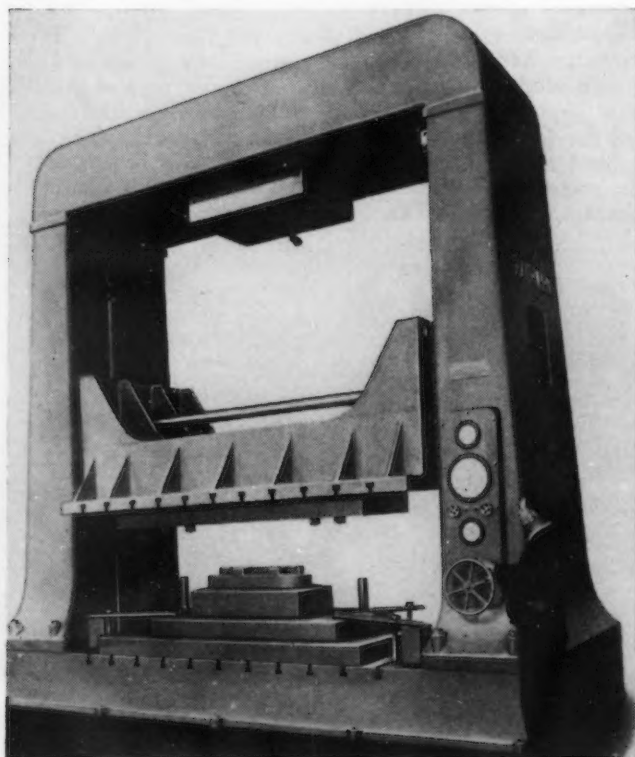
Presses are of the moving down type, the platens being actuated by two hydraulic rams, one in each column. Rams may be either single or double acting, as required by the work to be done. If dies are to be closed only, single acting rams will suffice; when it is advisable to place heavy pressure on the dies, double acting rams are used.

The platen is well guided and is provided with gibs and laminated shims for taking up wear. Even

and uniform motion of the platen is further provided for by a positive mechanical equalizing device consisting of a rack and pinion mechanism. Action of the mechanism is said to be such that there is no appreciable load on the column, beyond a slight reaction of the rack in rotating the equalizing shafts. Thus the columns, which are of welded steel plate, ribbed and braced, act only as guides for the platen.

Hydraulic power is supplied by a rotary-type pump which, with driving motor and oil reservoir, are housed within the welded-plate top cross member.

In spotting, one-half of the die is covered with pigment and the dies are closed either to point of contact or with pressure as may be required by the work at hand. The pigment marks the unpainted die and locates high spots or irregularities which may then be corrected.



AT LEFT

ACCURATE determination of inaccuracies in die-surface contours, without the hazard of die damage, is provided for in this die-spotting press.

o o o

AT RIGHT

THE principle involved in the design of this core hardness tester is that of the finger nail scratch, long common to foundry work.

Core Hardness Tester

A DEVICE for measuring the surface hardness of baked cores and dry sand molds has been developed by the Harry W. Dietert Co., 676 W. Grand Blvd., Detroit. The principle of operation of this tester





AND SHOP EQUIPMENT...

is similar to the finger nail scratch test. In action, the tester is pulled slowly across the face of the surface whose hardness is to be measured. A special dial indicator mechanism measures the depth penetration of a diamond cone point into the surface of the core. This point is mounted on an independent lever so that the force required to pull the diamond point along the core surface is not exerted on the depth measuring mechanism, thus insuring long life and maintenance of accuracy. The tester plate which bears against the core is hardened

and is designed so as to free the diamond point of loose sand grains. The hardness tester may be calibrated and checked for wear on the diamond point by pressing it against a metal surface plate.

While designed principally for controlling the surface hardness on dried molds and baked cores in the foundry, the tester can also supply research information necessary for improvement of core binders, core sand selection, moisture content of core mixtures, the mixing method, ramming and the manner of baking.

The continuous dual control is claimed to assure uniform performance at every control setting and to add markedly to successful operation. Designated as the Shield Arc SAE, these new machines will supersede the Shield Arc welders marketed by the company for the past six years.

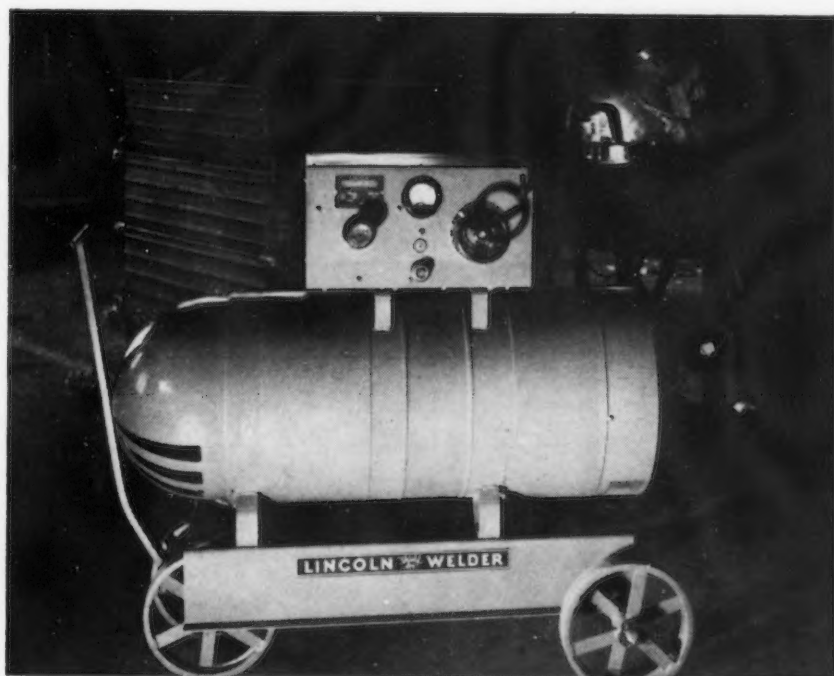
Features of the previous Shield Arc welders retained in the new machine include independent excitation, laminated magnetic circuit, all-purpose meter, polarity reversing switch, and no-voltage motor protection. The base and portable parts have been redesigned to give a more streamlined effect and shorter wheel base.

The new machines will be furnished in the following types and ratings: A.c. motor driven, 200, 300, 400 and 600 amp.; d.c. motor driven, 300, 400 and 600 amp.; generator for belt or couple service, 200, 300, 400 and 600 amp.; and engine driven, 200, 300 and 400 amp. All sizes will be available on Oct. 1.

Continuous Dual Arc Control Welder

A NEW method of arc control which makes possible the adjustment of both arc heat and arc penetration in a continuous se-

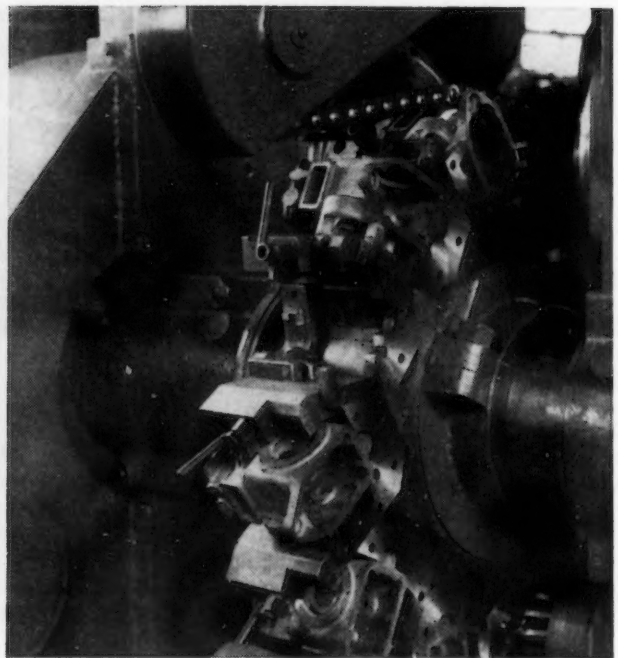
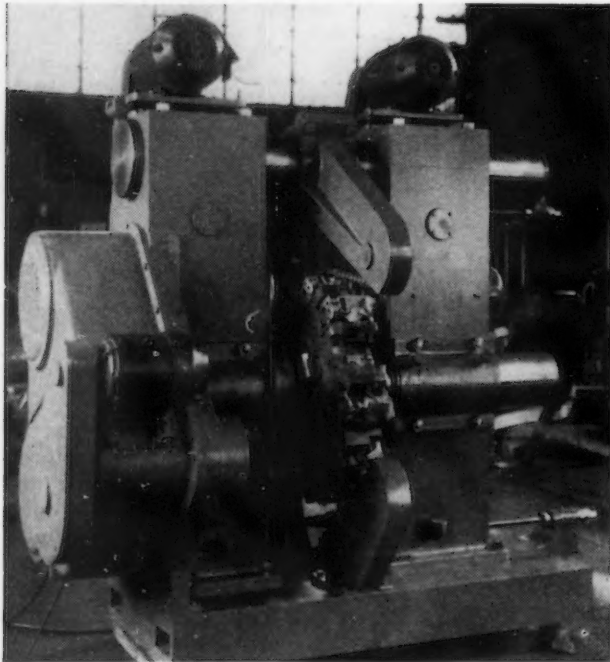
quence of fine increments features a new line of single-operator arc welders being introduced by the Lincoln Electric Co., Cleveland.



Adjustment of both arc heat and arc penetration in a continuous sequence of fine increments is outstanding in the new Lincoln SAE type arc welder.

Spray Nozzle for Descaling Work

A N improved spray nozzle for descaling strip, plate and bar steel has been brought out by the Worthington Pump & Machinery Corp., Harrison, N. J. The nozzle consists of a stainless steel body, a tapered self-locking spray disk of heat-treated stainless steel and a strainer of corrosion resisting material. Disk and strainer may be removed for cleaning without disturbing the nozzle body in the spray manifold. The one-piece disk contains an elliptical orifice designed to give uniform linear spray distribution and maximum impinging force. Furnished in three sizes, the disk has discharging capacities up to 35 gal. per min. at pressures up to 1000 lb. per sq. in.



Double End Miller Has Chain-Clamping Feature

IN the operation of a No. 2-A milling machine, built by Davis & Thompson Co., Milwaukee, Wis., a chain-clamping mechanism for holding work under cut is said to speed up loading and unloading operations. Work pieces are inserted in fixtures and lightly clamped with a small hand lever. As the revolving, fixture-holding trunion brings the work pieces to an upper position, they pass under

a tensioned traveling chain which exerts a predetermined pressure downwardly, seating the work piece solidly in the fixture; this pressure continues to be exerted until all machining stages are passed, at which point the work piece passes from under the influence of chain pressure and is ready to be removed from the fixture by a second movement of the small hand lever.

The machine is designed to provide variable distances between cutter spindles, of which there are two, on each the right and left hand sides. On either side one spindle carries a roughing cutter while the other carries a finishing tool. The right hand spindle carrying head is adjustable longitudinally. The finishing spindles are adjustable for toe and heel cut and can be adjusted while the machine is in operation. Pick off gears are utilized for feed and speed changes.

Flexible Shape Cutting Machine

SHAPES both simple and complicated, can be accurately flame cut either automatically with templates or by hand guiding on the new Oxweld type CM-12 shape cutting machine illustrated herewith. Simplicity and economy of operation together with unusual power and cutting capacity for its class are claimed for the machine, which is being marketed by the Linde Air Products Co., 205 East 42nd Street, New York.

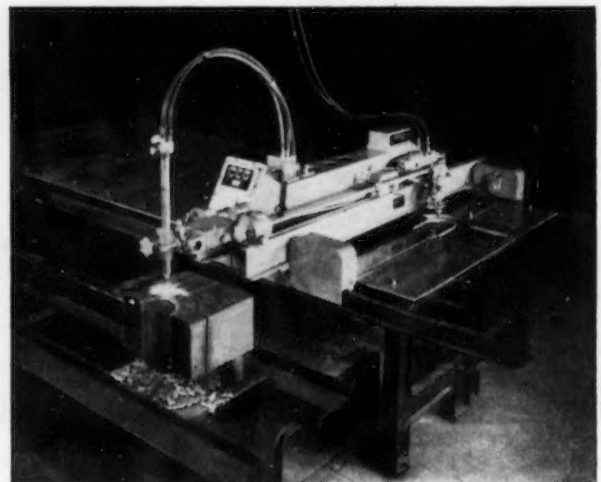
The machine will cut straight lines automatically in any direction and at any bevel. Cuts as long as 144 in. are possible and a feature emphasized is that straight line cuts can be made at any desired angle in the horizontal plane. A special attachment permits automatic production of circles from 2 to 24 in. radius. Multiple cuts can be made, the apparatus being designed to carry from two to five

blowpipes or torches which can perform multiple cutting operations under all conditions possible with a single blowpipe.

NEW flame cutting machine for the production of shapes either automatically or by hand guiding. Multiple cuts can be made, and the capacity is for material up to 12 in., and more in thickness.

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Features of design and construction include utilization of alloys, and the complete inclosure of vital working parts to assure adequate lubrication and minimum of maintenance. A 1/3-hp. driving motor



is employed and the speed range of the machine is from 1½ to 75 in. per min. Important controls have been duplicated to permit operation either from the blowpipe or the tracing position.

Material up to 12 in. in thickness can be handled; for heavier cuts a special blowpipe is available. Precision cutting is attributed to the sensitive tracing mechanism, accurate scale calibrations, and freedom from friction and vibration.

Precision Hand Miller For Heavy-Duty Work

THE Producto Machine Co., Bridgeport, Conn., announces a new design in a heavy-duty, precision type, hand milling machine. A one-piece column not only supports the slides for the knee and cutter head, but serves for mounting the motor on the machine top and fully incloses an improved transmission giving quick changes of spindle speeds. The drive from the motor to the cutter spindle is by V-Belt and pulleys through a transmission, giving six changes of spindle speeds. The new arrangement provides for quick belt changing and locking after adjustment. Spindle speeds range is from 106 to 1050 r.p.m. but lower or higher ranges may be had.

All slides are fitted with adjustable tapered gibs. Knee, saddle and table, and cutter head are of large size. Cutter spindle rotates

on Timken roller bearings, and all transmission shafts rotate on ball bearings. The area of base is 30 x 28 in.; height from floor to top of motor, 63 in.; table working surface, 26 x 6 in.; feed of table, 8 in.; hand lever, 20 in. crank lever; cross feed, 7 in.; vertical feed, 15 in.; net weight, 1350 lb.; motor used, 1 hp.

Wire and Rope Meter

DURANT MFG. CO., Milwaukee, Wis., are marketing a new measuring meter, designated as Model L-20, for wire and rope production. Capacity is up to 1½ in. diameter and 5280 ft. per min. Specifications call for a double-worm drive, ball-bearing counting unit; instantaneous circular brake; ball-bearing, hardened measuring wheel; solid steel pressure wheel; and double guides. Because of flexibility, the meter is easily adapted to warehouse service.

Heavy-Duty Industrial Roller Bearings

A COMPLETE series of heavy-duty industrial roller bearings, made in approximately 100 sizes, is now in production by the Fafnir Bearing Co., New Britain, Conn. Capacities range from 10,000 to 500,000 lb. depending upon size, speed and loading conditions.

In this increased range of bearing sizes, rollers of ¾ in., 1 1/16 in., 1¼ in. and 1½ in. diameter are utilized. A choice of 18 different bores is offered in bearings of this type.

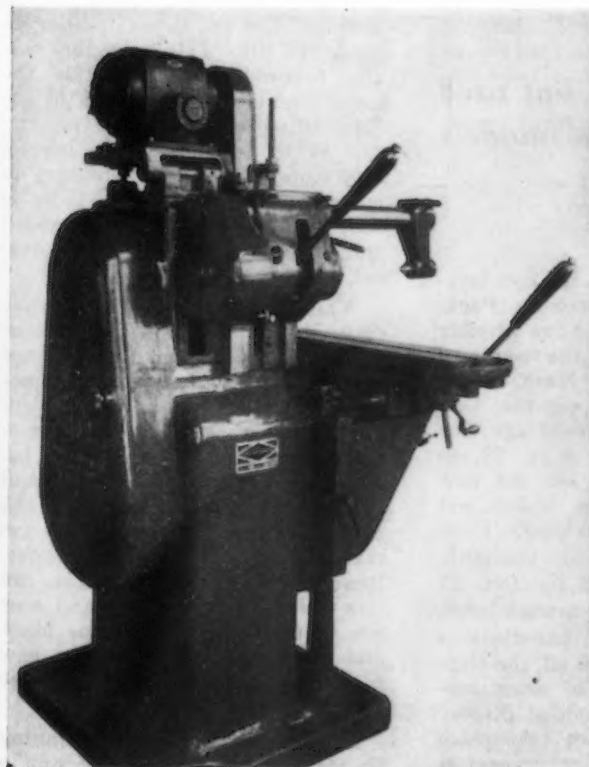
The large number of solid rolls incorporated in the cage assembly is emphasized as providing for extreme load capacity. The cage itself is fabricated from specially form-rolled spacer bar stock, with carburized and hardened end rings. Rollers are held in place and guided by spacer bars rather than by rivets through the rolls; the bars are riveted to the end ring, providing an accurate assembly for keeping rolls permanently aligned.

A fixed radial clearance is allowed for in the assembly design to provide for any expansion when the inner ring is shrunk to the shaft. This clearance likewise provides for temperature differentials which may occur in actual operation. Such conditions are said to be taken care of without seriously affecting the relationship of the bearing parts.

Press-Type Resistance Welding Machines

THE Eisler Engineering Co., 750 So. 13th St., Newark, N. J., announces a large press-type electric resistance welding machine, available up to 250 kva in foot, motor or air operated models. Design is for handling various thicknesses of metal in throat depths from 16 in. up to 48 in. Speed changes range from 30 to 100 welds per min.

The welder is a self contained unit; the timer, contactor and switch all being assembled in the welder.



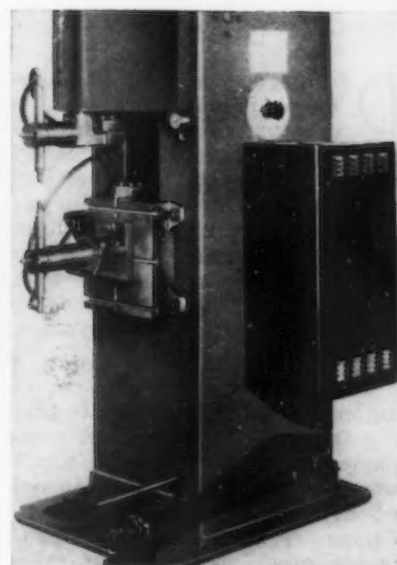
AT LEFT

TRANSMISSION inclosed within a unit housing and additional weight are featured in this improved precision hand miller.



AT RIGHT

THIS self-contained welding unit is particularly adapted to deep-throat work in varying thicknesses of metals.



THIS WEEK ON THE ASSEMBLY LINE



... Auto production reaches new low for year as Ford ceases 1936 model production, but six companies are in 1937 model production.

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... Car makers express great optimism for the future as every plant plans to increase daily schedule over 1936 runs.

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... Dealers' new car stocks in fine shape, but used car inventories will expand when new models are out.

DETROIT, Sept. 21.—The 1936 model production season is definitely over, with Ford Motor Co. dropping out of production of 1936 cars in the middle of last week. Right now Detroit is in one of those seething periods when every effort is being expended to get the new lines running and to get models out into the hands of dealers for early public announcement.

This year marks a new era in automotive public relations, in that for the first time motor car companies are quite frank to admit when they are out of production and when their new lines are moving. Companies that heretofore maintained great secrecy about their

new production plans are now issuing public announcements. Packard and Studebaker have already announced and are in the vanguard of the 1937 parade. Nash, which got into production on the new models a couple of weeks ago, has set its preview for Sept. 23, so that the public may see the new cars shortly after the dealers get a chance to look them over. Hudson's preview is set for the 29th. Pontiac's is scheduled for Oct. 17 and Buick will follow a week later, contrary to earlier expectations that Buick would lead off the General Motors family in announcement. In fact, the official display of Buick cars will not take place until Oct. 24. Buick at present is

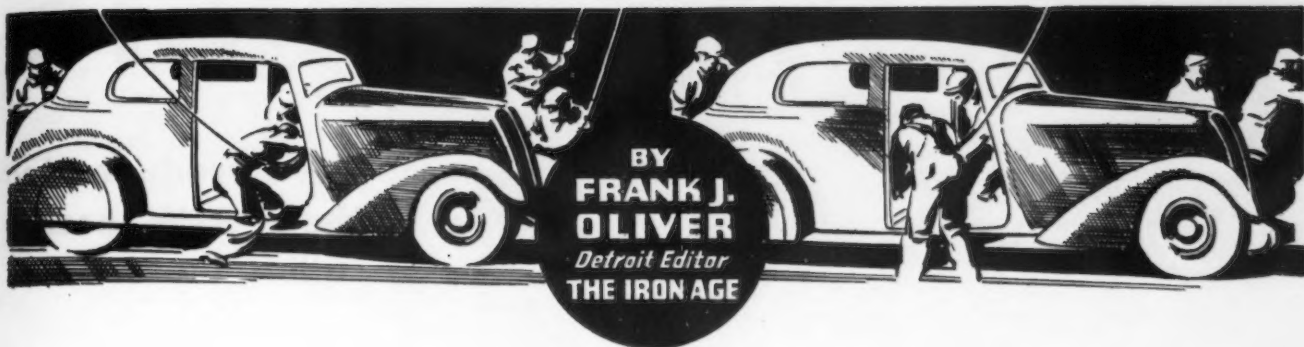
engaged in building up dealer stocks and at the last report was producing 250 cars a day, against the planned ultimate capacity of 1000 daily.

Plans of Other Companies

Chrysler is not quite so frank about its plans. Assemblies of new Plymouths are under way, but schedules are very light and probably only a few thousand cars will be off the line by the end of the month. On the other hand, Plymouth has been running its motor line six days a week right through the assembly shutdown, in order to achieve a bank of at least 100,000 motors before the assembly line gets going full tilt. This procedure was also followed last fall, since the motor line is the bottle-neck at the Plymouth plant. If daily production is to be stepped up beyond 2400 motors, it will be necessary to put up a new addition, as there is simply no more room for expanded machine shop facilities in the present quarters.

While this has been a year when expenditures for new equipment have run higher for the industry as a whole than in any year since 1928, Plymouth has been conspicuous by its absence from the machinery market, presumably because no important mechanical changes have been made in the motor. Many Plymouth parts are made in other Chrysler factories. Rear axle shafts, for example, are now being made on a brand new line in the Jefferson Avenue plant and the hypoid gears for the new rear axle will be cut at Dodge "Main."

Dodge, incidentally, is beginning to get its new lines going and a



private preview was held for important dealers last week. One observer reported that the new Dodge resembles the Chrysler Airflow in the rear and looks like a French castle in front. This observer hastened to add that it was a real swell looking car. In fact, it is a difficult task to find adjectives to convey to another person what some of the new cars will possibly look like. One man described the new Buick as being reminiscent of the Graham-Paige in the rear and having certain features of the Cord in that it had an extremely low top, compared with anything hitherto put on the market. Undoubtedly the adoption of the hypoid rear axle has had much to do with the lowering of the Buick, since Studebaker has reduced by 3 1/16 in. the height of the door sill from the ground, without reduction in head room, by using a hypoid drive axle.

Output at Low Point

Output for the week ended Sept. 19 was estimated at 26,640 passenger cars and trucks in the United States and Canada by Ward's Automotive Reports. This figure compares with 27,619 last week and with approximately 13,250 in the comparative week of 1935. Completion of 1936 model production at Ford made a shrinkage in total volume which could not be counterbalanced by advances on the part of other car makers, including Packard, Studebaker, Nash, Buick and Graham-Paige. Chevrolet has not yet resumed its assembly line operations, although it is understood that about 100 motors an hour are now going down the new motor line. The forge plant and the gear and axle plant in Detroit

are practically working full schedules on parts, so that it should not be long before Chevrolet resumes assembly operations and builds up its volume at a time when Ford Motor is temporarily out of the picture.

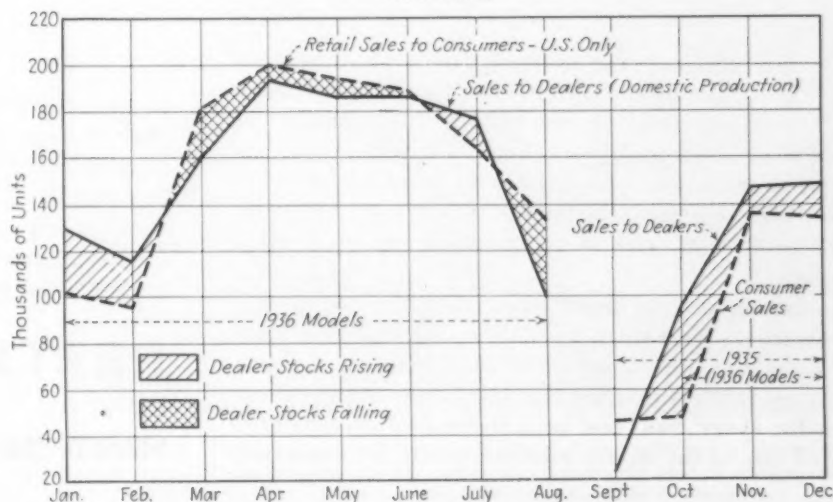
Although Ford has been well set on its die program, there is still talk that final decision has not been made on the brakes for the new cars. Some body parts were run through, at least experimentally, as far back as six weeks ago. This statement includes the new all-steel top, which proved to be quite a problem to Fisher Body when the sheets were first run through the presses. There seems little doubt in anybody's mind now that Ford will offer a small V-8 engine as an option in the same chassis that would ordinarily accommodate the present V-8 engine. During the

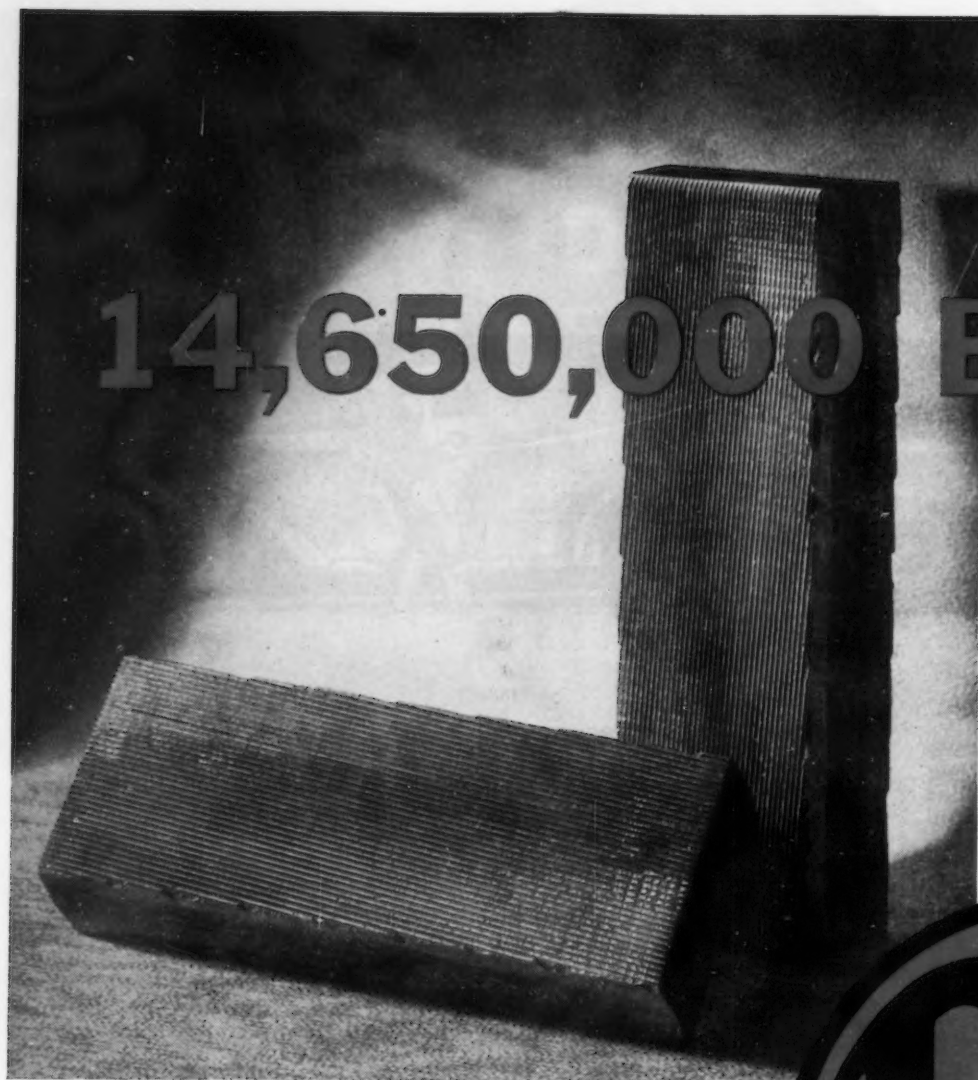
past month production on this small motor has been stepped up from 300 to 350 units a day, so that it is fairly certain that these motors are being made ready for early use. Ultimate capacity is expected to be 1200 such motors daily, when the tooling program is finally completed. Oddly, Ford seems to be reconverting and retooling older machinery for this job, rather than buying new equipment.

Trade Highly Optimistic

Whenever one talks of new schedules, it is almost certain that an increase will be indicated over last year. After a record-breaking year, Buick is stepping up its daily production by 25 per cent, from 800 to 1000 units a day. Graham-Paige, although not an important factor in the total market, reports it will increase production capacity

RELATION OF GENERAL MOTORS MONTHLY SALES TO DEALERS AND TO CONSUMERS
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14,650,000 BOLTS

were produced by
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rolling dies!

Another good proof of the excellence of Pratt & Whitney Tools



THE performance of these Thread Rolling Dies is typical of the records Pratt & Whitney small tools of all kinds are making. Mechanics the world over know and like them. When next you are buying small tools, remember that proper steel, controlled heat treatment, and efficient design are requisites of all good tools, and of every one made by Pratt & Whitney.

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temperature controls and electrical timing. Accurate electric heat hardens and draws the steel. Is it any wonder that Pratt & Whitney tools are uniformly hard and tough?

Have you a copy of the Pratt & Whitney Small Tool Catalog? It is free to any interested executive who will request it on his company letterhead.

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by 50 per cent when it gets through with plant changes, which also include shifting of body production from Wayne, Mich., to Detroit. This move alone is estimated to reduce manufacturing costs by \$400,000 during the coming season and should place Graham-Paige in a stronger competitive position. Incidentally, Graham-Paige reports a rather definite swing toward supercharged motors and approximately half of all 1937 cars will be produced with supercharger incorporated, compared with 28.5 per cent for the 1936 series and with but 6.5 per cent for 1935 models. Although superchargers have shown marked improvement in the performance of the motor, it is odd that no other manufacturers have followed Graham-Paige's lead in this respect, other than Auburn in some of its special high-speed jobs. Engineering opinion is that the supercharger is a perfectly sound and logical way of improving the specific output of a motor without reducing its useful life.

One may ask what all these increases in schedules are based on—General Motors units up 20 per cent of the average and Chrysler about the same. The answer may be found in a general spirit of optimism in the industry, regardless of which way political fortunes may turn on Nov. 3. Speaking before a regional automobile dealers' association recently, a Chrysler official said, "These are prosperous times for the automobile industry. There has been a jump in the volume during the past two years from 2,000,000 to 5,000,000 cars and I predict we shall have two more years of good business." Harlow H. Curtice, president of Buick, in speaking before a group of service representatives last week remarked, "The public is hesitant to appraise the extent to which recovery has progressed, but I am convinced that recovery is riding high and has reached the place where nothing can stop it in 1937."

As evidence of his optimism, Mr. Curtice recalled the fact that Buick is pouring in an additional \$15,000,000 into new equipment and plant rehabilitation on top of a similar program completed a year ago. Other executives have voiced similar sentiments during recent weeks, but the best indication of the feeling of the industry as to the future is found in the tremendous buying program that has gone on in the past year for new equipment. Many district machinery sales offices in Detroit report sales for the first eight months of this year in excess of any previous yearly records and many are willing to believe that the real spend-

ing spree for equipment has hardly got under way.

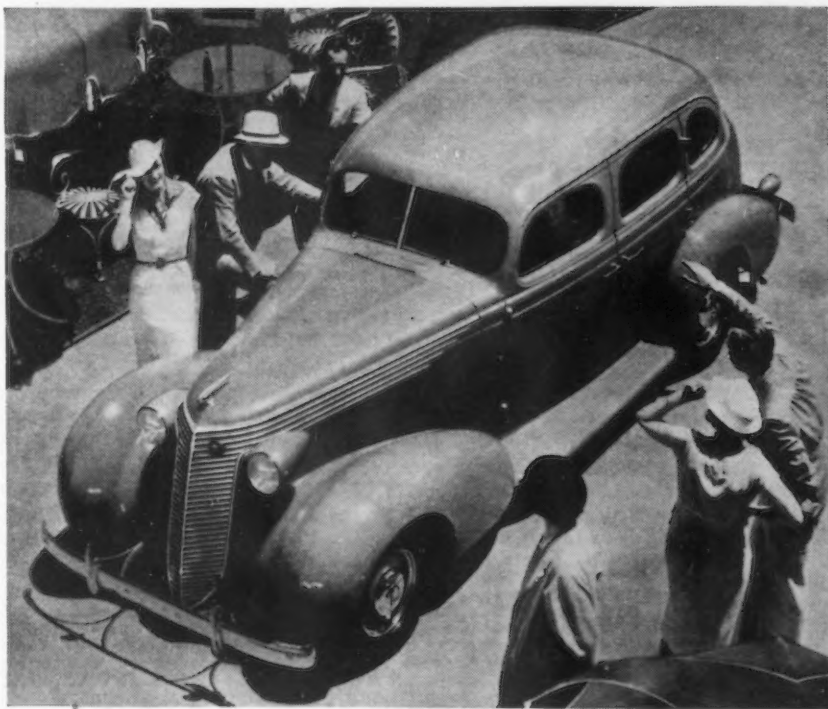
Used Car Stocks Low

With the introduction of 1937 models already here and the rest to follow shortly, dealers' stocks are found in about as favorable a position as they have been in many years. Stocks of both new and used cars are not high and for more than one model it is expected that dealers will run short of cars before they can be supplied with the new product from the factories. Used car stocks are not in as favorable a position, since the sale of new cars immediately following the announcements is bound to pile up inventories very rapidly in used cars at a time when seasonal sales of used cars are just beginning to decline. Efforts to improve trade practices in the handling of used cars have been going on apace throughout the summer and for a while it looked as if a plan sponsored by the Michigan dealer group would find acceptance among the important manufacturers and the leading finance companies. Unfortunately, the plan struck a snag in the form of that ancient war club known as the Sherman Anti-Trust Act. As a result, the plan is being completely revised and is now going through the slow and painful process of being sold to the large manufacturers and at least getting their moral support if not their active cooperation. If some such plan is not adopted, we shall again find a very prosperous auto-

mobile year in which few profits are found for dealers.

Steel Buying Heavier

With automotive production about to get under way in real volume, steel makers are finding orders coming in at a rapid rate at this time, although releases against older orders are yet light. The automotive industry, however, forewarned by trade paper comments, are not going to find themselves lacking steel for their new models. Almost a month ago very heavy buys were made by General Motors and Ford to cover their requirements for initial runs and it is expected that very shortly similar heavy commitments will again be made. Chrysler is in the market strong at this time on the few gages of material that are affected by the recent price increases. While shipments from the mills are fairly low at present, there is no doubt that the mills are building up stocks so as to meet future releases on very short notice. The steel industry's best customer will not be embarrassed for lack of material. Other groups, like office furniture and similar steel cabinet makers, are suddenly finding that deliveries are much longer than they had foreseen and pressure from these sources is rather strong at the present time. Refrigerator makers should also enter the market in a large way in a very few weeks, since their seasonal schedules almost coincide with those of the automotive industry.



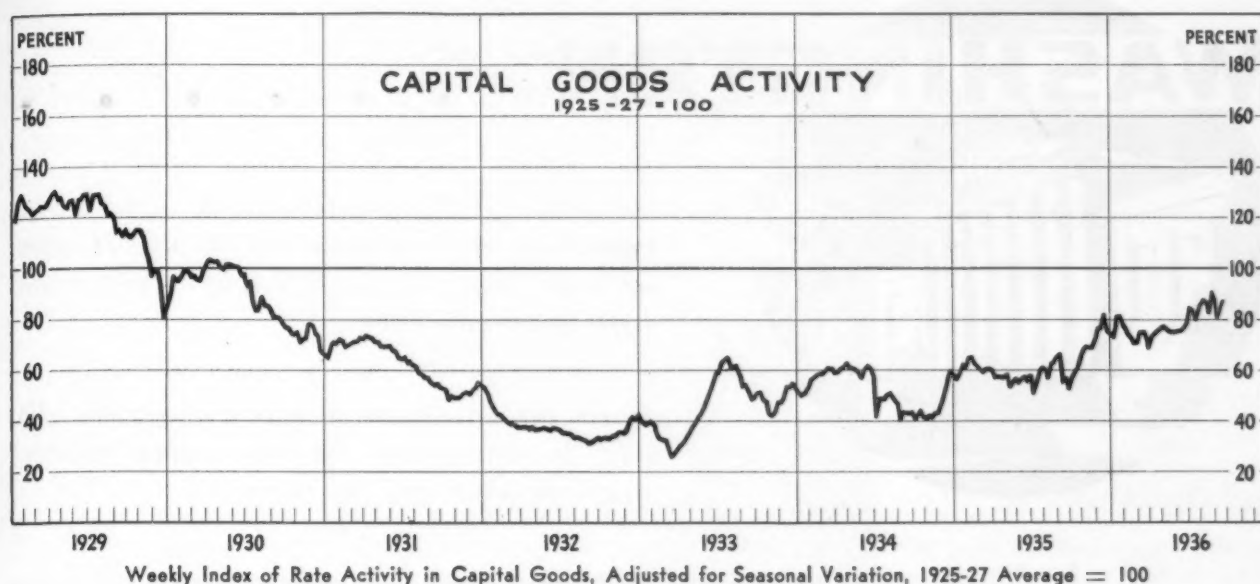
HORIZONTAL louvre lines carried back from the radiator grille are characteristic of the new 1937 Studebakers and this styling will probably be seen in other models. Hood is hinged at the rear and the emblem is the lifter at the front.

Current Metal Working Activity Statistically Shown

These Data Are Assembled by The Iron Age from Recognized Sources and Are Changed Regularly as More Recent Figures Are Made Available.

	August, 1936	July, 1936	August, 1935	Eight Months, 1935	Eight Months, 1936
Raw Materials:					
Lake ore consumption (gross tons) ^a	3,968,845	3,826,050	2,615,927	19,170,108	27,407,391
Coke production (net tons) ^b.....	.....	3,828,548	2,833,707	22,468,866	.....
Pig Iron:					
Pig iron output—monthly (gross tons) ^c	2,711,721	2,594,268	1,761,286	13,080,549	18,834,215
Pig iron output—daily (gross tons) ^c	87,475	83,686	56,816	53,829	75,944
Castings:					
Malleable castings—production (net tons) ^d...	.....	44,413	35,245	296,057	.....
Malleable castings—orders (net tons) ^d.....	.....	41,031	35,602	281,356	.....
Steel castings—production (net tons) ^d.....	.....	78,654	34,972	247,022	.....
Steel castings—orders (net tons) ^d.....	.....	74,001	45,426	262,366	.....
Steel Ingots:					
Steel ingot production—monthly (gross tons) ^e ...	4,195,130	3,922,731	2,915,930	21,226,408	29,444,196
Steel ingot production—daily (gross tons) ^e	161,351	150,874	107,997	102,543	141,559
Steel ingot production—per cent of capacity ^e ...	73.52	68.74	48.78	46.31	64.5
Finished Steel:					
Trackwork shipments (net tons) ^f	6,401	6,216*	4,028	29,657	47,209
Steel rail orders (gross tons) ^g	5,800	56,880	9,400	317,157	659,028
Sheet steel sales (net tons) ^h.....	.....	192,873	207,140	1,558,438	.....
Sheet steel production (net tons) ^h.....	.....	217,651	206,613	1,578,011	.....
Fabricated shape orders (net tons) ^h.....	.....	188,053	102,859	687,806	.....
Fabricated shape shipments (net tons) ^h.....	.....	147,824	122,749	728,145	.....
Fabricated plate orders (net tons) ^d.....	.....	60,324	23,628	141,980	.....
Reinforcing bar awards (net tons) ^h	33,770	45,245	13,590	136,140	255,610
U. S. Steel Corp. shipments (tons) ^h	923,707	950,851	624,497	4,726,290	6,905,904
Ohio River steel shipments (net tons) ⁱ	113,560	110,495	92,501	578,613	689,676
Fabricated Products:					
Automobile production, U. S. and Canada ^k....	.....	451,474	247,686	2,970,913	.....
Construction contracts, 37 Eastern States ^l....	.....	\$294,833,800	\$168,557,200	\$1,024,423,000	.....
Steel barrel shipments (number) ^d.....	.....	752,223	600,993	4,189,606	.....
Steel furniture shipments (dollars) ^d.....	.....	1,510,716	1,327,252	9,450,546	.....
Steel boiler orders (sq. ft.) ^d.....	.....	1,109,849	543,975	3,736,620	.....
Locomotive orders (number) ^m	3	9	0	21	134
Freight car orders (number) ^m	3,225	4,469	100	7,183	34,248
Machine tool index ⁿ	127.5	150.1	125.8	†112.2	†135.5
Foundry equipment index ^o	145.4	159.6	113.0	†102.4	†148.8
Foreign Trade:					
Total iron and steel imports (gross tons) ^p.....	.....	47,940	31,312	246,097	.....
Imports of pig iron (gross tons) ^p.....	.....	12,496	8,568	67,573	.....
Imports of all rolled steel (gross tons) ^p.....	.....	19,638	17,657	129,348	.....
Total iron and steel exports (gross tons) ^p.....	.....	296,738	247,312	2,140,048	.....
Exports of all rolled steel (gross tons) ^p.....	.....	93,365	82,866	577,704	.....
Exports of finished steel (gross tons) ^p.....	.....	83,599	64,400	497,988	.....
Exports of scrap (gross tons) ^p.....	.....	192,817	156,658	1,481,132	.....
British Production:					
British pig iron production (gross tons) ^r	635,800	661,100	543,400	4,263,700	5,046,000
British steel ingot production (gross tons) ^r	872,700	974,100	759,900	6,364,400	7,591,000
Non-Ferrous Metals:					
Lead production (net tons) ^s.....	.....	39,576	34,856	261,759	.....
Lead shipments (net tons) ^s.....	.....	38,996	38,195	268,202	.....
Zinc production (net tons) ^t	43,614	45,553	35,547	280,543	352,899
Zinc shipments (net tons) ^t	46,085	41,891	38,824	286,102	340,463
Deliveries of tin (gross tons) ^v	5,385	7,120	5,320	39,000	49,525

†Three months' average. *Revised.
Source of figures: ^a Lake Superior Iron Ore Association; ^b Bureau of Mines; ^c THE IRON AGE; ^d Bureau of the Census; ^e American Iron and Steel Institute; ^f National Association of Flat-Rolled Steel Manufacturers; ^g American Institute of Steel Construction; ^h United States Steel Corp.; ⁱ United States Engineer, Pittsburgh; ^j When preliminary, from Automobile Manufacturers Association—Final figures from Bureau of the Census; ^k F. W. Dodge Corp.; ^l Railway Age; ^m National Machine Tool Builders Association; ⁿ Foundry Equipment Manufacturers Association; ^o Department of Commerce; ^p British Iron and Steel Federation; ^q American Bureau of Metal Statistics; ^r American Zinc Institute, Inc.; ^s New York Commodities Exchange.



THE IRON AGE Weekly Index Numbers of Capital Goods Activity

(1925-27 Average = 100)

Last week	87.7	Same week 1933	48.3
Preceding week	84.3	Same week 1932	32.3
Same week last month	90.8	Same week 1931	54.3
Same week 1935	57.2	Same week 1930	80.6
Same week 1934	43.0	Same week 1929	112.7

INDUSTRIAL activity gained appreciably last week, and THE IRON AGE's seasonally adjusted index rose almost $3\frac{1}{2}$ points to 87.7 per cent of the 1925-27 average. This marked a continuance of rising trend, the index having been at a level of 84.3 the week before and 80.1 three weeks ago.

The better showing in the general level of activity reflected increases in steel making rates, the commencement of 1937 model production of automobiles, seasonally strong shipments of lumber and a marked upturn in private construction reflected by the index's heavy engineering component. Recent word

of industrial conditions in the important Pittsburgh area indicated a slight retrogression in activity, but currently the signs point to expanding business.

The 87.7 level of THE IRON AGE's capital goods index is second to the high mark this year. The peak was reached a month ago when the index rose to 90.8. For the last three months, however, at only one point has the curve of activity fallen as low as 80.0 per cent of the 1925-27 average, a good record of sustained business strength. The latest showing of the index compares with a figure of 57.2 last year at this time.

Components of The Index (1) Steel Ingot Production Rate, from THE IRON AGE; (2) Automobile Production, from Cram's Reports, Inc.; (3) Revenue Freight Carloadings of Forest Products, from Association of American Railroads; (4) Industrial Productive Activity in Pittsburgh District, from Bureau of Business Research of University of Pittsburgh; (5) Heavy Construction Contract Awards, from *Engineering News-Record*.

Steel Industry Large User of Water

MORE than four times as much water is used every day by the iron and steel industry when operations are at full capacity as is consumed daily in all five boroughs of New York City, the American Iron and Steel Institute has calculated.

It is estimated that a total of approximately four billion gallons of water per day is consumed by

iron and steel plants operating at capacity. By comparison, the highest daily average consumption of water on record for the five boroughs of New York City was 985,300,000 gal. per day, the average in 1930.

The annual consumption of water by the steel industry is estimated at one trillion, 460 billion gallons. This is more than the storage capacity of any of the great dams of the world with the single exception of Boulder Dam, which can store nearly ten trillion gallons of water.

Approximately 45 per cent of the

water needed by the industry is used to make steam, while an additional 29 per cent is used in steel works to cool furnace doors and rolls, operate hydraulic machinery and wash away the scale which forms when hot steel is rolled.

About 20 per cent of the volume of water consumed is used to cool the blast furnaces. The operation of quenching the white hot coke as it comes from the coke oven requires about 6 per cent of the water consumed. Less than one-third of 1 per cent is used for sewage purposes.

WASHINGTON



By L. W. MOFFETT
Resident Washington Editor,
The Iron Age

WASHINGTON, Sept. 22—Regulations prescribed by Secretary of Labor Perkins covering the Walsh-Healey government contracts act generally have been interpreted as fulfilling her prior promise that the act will be administered "with scrupulous attention to the necessity of open records of action, public hearings, and recorded analysis of the reasons and limitations of each discretionary action."

This is not to say, however, that operation of the American Federation of Labor sponsored act, to become effective next Monday, will be simple. On the contrary, it is expected that the board to be set up by the Department of Labor will inevitably find itself faced with some perplexing problems. But it is indicated by both Miss Perkins' announcement of plans for its administration and the regulations that a spirit of reasonableness will be manifested. Miss Perkins has said that "constructive and positive methods will be adopted" and the regulations promulgated appear to substantiate this statement. On the whole they are clear and, while they leave unsettled some of the many questions that will arise, further clarification is expected from another set of regulations to be prescribed and which will deal with the procedure for hearing complaints on violations of the act. As for specific matters it is likely they can be cleared up only as administration gets under way and individual

cases are presented to the board. The regulations which have been sent out have gone to government contracting officers, manufacturers, dealers and others who are affected by the new law and are being studied by them.

Once it becomes effective the law requires that bids on Federal contracts shall be based on its terms. In brief they make it necessary that the bidders are manufacturers or regular dealers, except that exemption from this requirement may be granted by the Secretary of Labor. She may do so upon the request of the head of the contracting agency or department when accompanied by his finding that it will be so difficult to obtain satisfactory bids for the contract or class of contracts under the stipulated restrictions that the conduct of the government business will be seriously impaired. The purpose of restricting bidders to manufacturers and regular dealers, with the exception noted, is to do away with bid peddling by brokers. However, it has been explained that this does not mean that bidders may not deal with legitimate subcontractors. Bona fide manufacturers or their regular agents, it has been pointed out, will suffer no interference but will, of course, be required to have regular and reliable sources of supply.

The object back of the restriction is to assure standards set up by the act, the 8-hr. day, and 40-hr. week, together with a minimum wage. The latter is to be based on prevailing wages applying to industries in sections where the government work is to be done. In such basic industries as steel, automotive, etc., it is recognized that it will be a simple matter to determine prevailing wages. In some of the smaller and miscellaneous industries hearings will undoubtedly have to be held before such wages are determined and set. It has been stated that the Department of Labor will not arbitrarily adopt the minimum wage provisions once contained in the codes without inquiry into present conditions.

Steel Wages Above Requirements

In the steel industry neither the wage nor hour standards should prove to be a problem generally. For both steel wages, averaging 67.3c. per hr., and hours of employment exceed requirements of the act, and the industry operates on the 8-hr. per day schedule. Actually the average work-week for steel wage earners is 39-hr. Inasmuch, however, as the steel industry is a continuous industry the prospect of overtime pay and therefore of higher costs of production

... Secretary Perkins announces regulations covering enforcement of Walsh-Healey act with promise that law will be enforced with reasonableness.

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... Costs on government work undoubtedly will be increased by expensive record keeping that will be required.

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... President urges private industry to share relief burden by contributions to community chest funds.

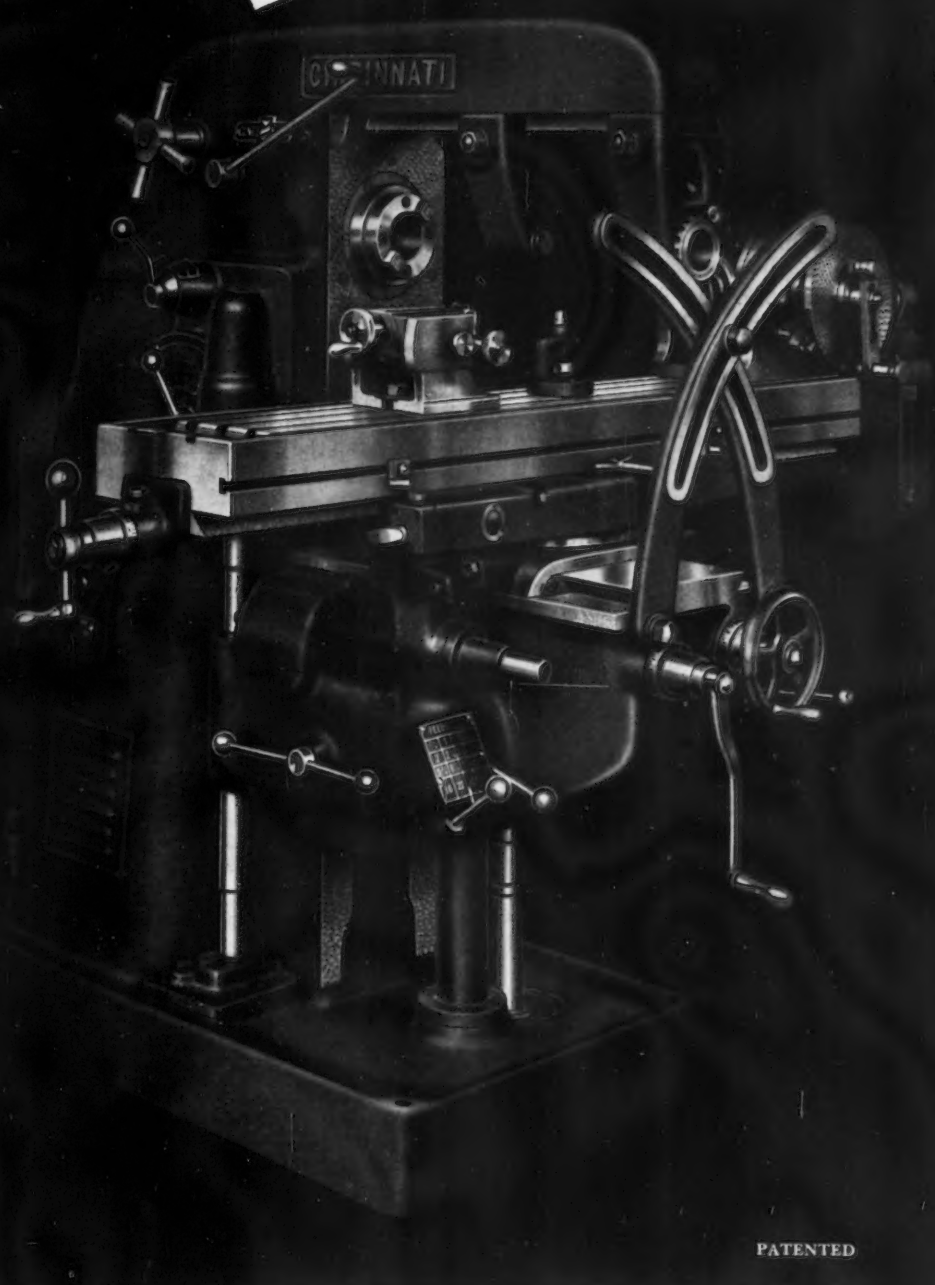
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... Roosevelt also seeking closer cooperation with business—New labor legislation to be introduced in next Congress.

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is seen. This depends on what latitude may be given under the authority of the Secretary of Labor to grant exemptions. For example, if a mill is rolling on tonnage which, say, requires further time for completion by a shift of labor which has already worked 40-hr., during a given week an overtime rate would have to be fixed in the absence of an exemption. Since such a practice might well be common it is quite conceivable that the overtime rate of pay would be required. Miss Perkins has said that in fixing the amount of the overtime rate the department will give consideration to conditions in continuous process industries or industries of an extra hazardous nature, seasonal peak production periods, flat weekly or monthly wage scales. The same consideration, she has stated, will be given to emergency conditions. She is authorized to allow reasonable limitations, variations, tolerances and exemptions. The regulations issued, however, apparently contemplate no exemptions inasmuch as they provide for the 8-hr. day and 40-hr. week with pay for overtime. They also state that unless otherwise set by the Secretary of Labor the rate of pay

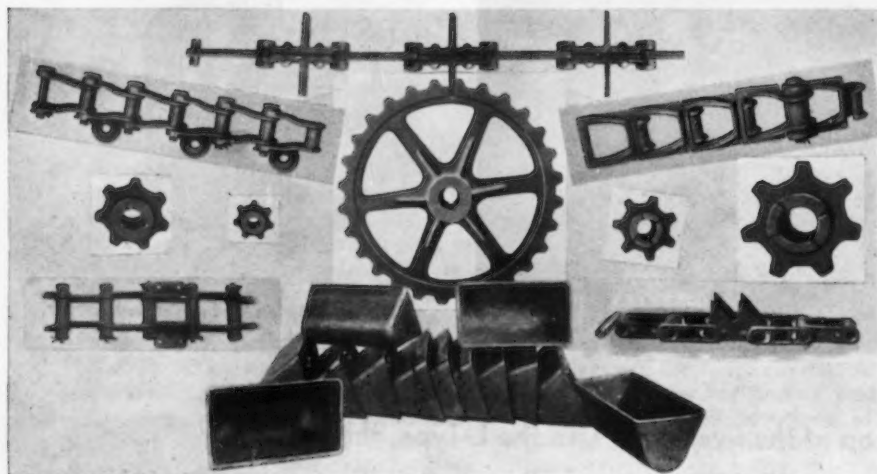
for overtime shall be one and one-half times the basic hourly rate or piece rate.

Government's Costs Will Be Higher

Clearly this will raise costs. And since in such industries as steel it will not be possible to segregate tonnage between that which is for a Federal government contract and a private contract the higher costs will fall partially on private consumers despite the fact that the act is supposed to apply solely to government work. However, where operations are confined solely to government work it is equally clear that higher costs will fall alone on the government and thus give advantage to competing private consumers. In this connection it would seem evident that a private shipyard, for instance, could purchase steel and other supplies at a lower price than could the Navy yards if the latter are faced with overtime steel pay. The former would not be. It is understood that this situation has caused some government purchasing agencies to complain against the terms of the act. It will handicap the government in competition with private industry.

There has been considerable discussion as to the possible effect of the so-called "open market" regulations. This relates to the so-called statutory exemptions covering emergency purchases. Under the regulations these exemptions are continued. As a result, government purchasing agents are authorized by statute or otherwise to purchase in the open market without advertising for bids. This regulation has been interpreted in some quarters to mean that the open market is conditioned only on the authority of the purchasing agent rather than on the nature of the contract and that in consequence the authority might be so widely used as to eliminate much bidding now required. At the Department of Labor it was stated that this interpretation is incorrect. Instead, officials said the regulation merely continues the present law as to emergency purchases. Generally these purchases involve only small amounts. The law referred to provides that when immediate delivery or performance is required by public exigency the article or service required may be purchased by open purchase or contract at the places and in the manner in which such articles are usually bought and sold or such service engaged, between individuals. The act covers only purchases of \$10,000 and over.

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Will Require Expensive Records

In addition to possible increased costs as the result of overtime pay, it is contended that contractors engaged in government work will also be faced with added expense by reason of the record of employment which they will be required to keep. The regulations require that every contractor operating under the act shall keep such records of employment and that they shall be available for the inspection and transcription of authorized representatives of the Secretary of Labor. The records must give the name, address, sex, age and occupation of each employee, the wage and hour records of each, including the rate of wages and the amount paid each pay period, the hours worked each day and each week and the period during which each employee was engaged on a government contract with the number of such contract. In some instances separate records could be kept as they apply to government work. On the other hand, it is contended that in steel and other continuous industries it will not be possible to separate such a record from the regular records of payrolls and thus would make necessary a rather costly readjustment for keeping payroll records.

Private Industry Asked by President to Share Relief Burden

WASHINGTON, Sept. 22.—Corporations are allowed deductions up to 5 per cent of net income on contributions to welfare work . . . For that reason they are in better position than they would be otherwise to do their part in responding to the suggestion of President Roosevelt that community chests of the country this year increase by 10 per cent their goal of last year. . . . The President made the suggestion last Thursday to Gerard Swope, president of the General Electric Co., as chairman of the 1936 Mobilization for Human Needs, made up of 300 welfare leaders. . . . They gathered in Washington and mapped out a campaign . . . assembled on the White House lawn they were addressed by the President. . . . Largely they consisted of representatives of private corporations. . . . Of course they manifested a keen understanding of the gigantic relief burden which the nation faces and willingness to aid in its solution. . . . As Mr. Swope emphasized at a press conference the relief need is greater than ever, despite improved business conditions. . . . He expressed the hope that numerous corporations would give at least 2 to 3 per cent of their net income to charity but said he did not expect many to contribute to that extent. . . .

However, the tax exemption on such contributions will make it possible to increase them over what they would be if there were no such exemption. . . . Consequently liberal response to the President's appeal is expected . . . and strangely enough such response would not be likely if the views of the President expressed in July of last year had prevailed . . . at that time he expressed opposition to the granting of exemption to corporations for such contributions. . . . He was of the opinion, he said, that corporations should not be allowed to purchase good will! . . . It was his thought that a sum so spent should not be entitled to tax reduction. . . . This view was strongly resented. . . . It was held to be entirely unfounded and to reflect cynicism toward sympathetic and realistic aid toward human want. . . . Fortunately, the exemption on contributions was adopted in the tax bill, despite the White House attitude. . . . The resentment was just as great as is administration resentment toward charges that there has been a wildly extravagant outpouring of mil-

lions upon millions of dollars from the Federal treasury which went neither for welfare work nor economic needs. . . .

It is assumed this was what the President had in mind when he told the welfare leaders that "I resent

and you resent, I am sure, those supercilious and uncharitable sneers which from a small element among us have been directed against those in need and against those who were honestly seeking to help those in need." . . . If there are such sneers (it is doubted that there are) they can come only from such small and so few minds as to be unworthy of recognition. . . . Certainly they will not hold up welfare work or other aid to the needy. Proper use of either government or



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private funds, no matter what the amounts, never has been the object of sneers from any decent source. . . . The meeting indicated plainly that private industry stands ready to do its share . . . though often attacked by the President, his appeal to it for help was framed in fair terms, yet there were those who thought the President might well have omitted recurring reference in rather gilded terms to the return of prosperity. The swing toward recovery is a most happy circumstance but there is certainly a widespread feeling that industry itself is more deserving than any other source for digging itself out of the red, where it has done so . . . assuredly it has made possible much of the government activities . . . some of which have proven retardants to further recovery.

Relief Problem Still Great

Mr. Swope pointed out the magnitude of the relief burden and explained that agencies have been doing maximum work with minimum funds. . . . The social aspect of the situation was also emphasized by him. . . . Mr. Swope stated that "One of the greatest problems—that of building the character and maintaining the morale of those who have suffered severely in the depression—has scarcely been touched." . . .

The much talked-of prosperity also falls far of adequate support. . . . For in the face of the sharp stimulation of industry, em-

ployment and earnings, the picture remains dreary, with some 9,000,000 or 10,000,000 still unemployed. . . . The community chest collections will be only a bagatelle as related to actual needs and it is evident that based upon present conditions government withdrawal from relief work and greater dependence upon private industry will not proceed at as fast a pace as many have hoped. . . . Stillman Westbrook, president of the Community Chest and Councils, Inc., and vice-president of the Aetna Life Insurance Co., Hartford, Conn., said community chests last year raised \$76,127,000. . . . The 10 per cent increase asked for by the President would mean the comparatively small total of \$83,739,000. . . . Private industry has contributed billions during the depression in the way of aid to its idle employees and its communities. . . .

There has been no sensible criticism of the President for appealing to private industry to aid in welfare work, even though such aid has been constantly given freely and would continue in the absence of such appeal. . . . But it is clearly recognized that the situation has not been helped by miscellaneous attacks on the "economic Royalists." . . . It has been felt that a bill of particulars was in order so as to show specifically just who constitute the "forces of entrenched greed." . . . To do so would give greater weight to the more conciliatory attitude toward business which

the President appears to have adopted, temporarily at least . . . since starting out on his political campaign . . . a conciliatory attitude, however, which has not been adopted by some New Deal subordinates. . . .

President Now Seeking Cooperation of Business

The President is eager for the cooperation of business in connection with administration plans to have it absorb more of the unemployed. . . . In his efforts to reduce relief rolls and to shift unemployed to private industry payrolls, the President asked for cooperation with private industry in connection with plans for a survey on unemployment. . . . It is also noted that as the campaign gets under strong headway, White House conferences with business groups again have been inaugurated. . . .

Nevertheless, addresses of the President have implied his purpose, in the event of reelection, to embark on further Federal control of industry and agriculture and has created apprehension. . . . Certain it is that increased industrial regimentation is in the minds of organized labor and inasmuch as strong groups in organized labor are actively supporting the President politically it is felt the President if continued in office will be under deep obligation to yield to its demands . . . even beyond those plans of "economic planning" which the President himself may have in mind. . . . Renewal of the NRA or its equivalent clearly is in the minds of organized labor forces. . . . Precisely how it could be accomplished in the face of the Schechter decision is not clear by any means . . . perhaps by coolly disregarding the Supreme Court and the Constitution . . . or would Congress be asked to increase the Court's membership? . . . Both of the rival factions of organized labor—the orthodox American Federation of Labor forces, headed by President William Green, and the rebellious Committee for Industrial Organization, headed by John L. Lewis—are in accord in demanding legislation to control wages, hours and working conditions. . . . Mr. Lewis has indicated what he would demand if in the remote event that he succeeded in organizing steel and other mass industries . . . obviously if he had legislative enactment back of him his demands would have greater force than they would have otherwise. . . . He has said that common labor should be paid a minimum wage of \$2,500 a year, with differentials for semi-skilled and skilled workers . . . additionally he has urged a work week of "approximately 30 hr." . . . Mr.

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Green has said that the minimum wage should be at least \$1,900 . . . and he likewise reiterated a demand for the 30-hr. week. . . . It is therefore taken as a matter of course that wage and hour control over industry will be again urged at the next session of Congress. . . . The 30-hr. week bill once more will be hauled out of the legislative hopper, probably more as a mark to shoot at rather than any expectation that this specific measure will be passed . . . nor is it assumed that any effort will be made in the futile direction of actually stating a minimum wage . . . rather the minima suggested by Lewis and Green will also be marks to shoot at . . . just as Green's Walsh-Healey governments contracts act is meant as an entering wedge toward Federal control over private industry of wages, hours and working conditions. . . . The actual hour and wage provisions of this act itself meet with no objection from industry as a whole . . . the concern over it is that it will be used as a precedent toward further industrial regimentation. . . .

New Labor Legislation

Last week in an address before the CIO in New York, Representative Ellenbogen of Pennsylvania made it evident that, if reelected, he would offer legislation to control hours, wages and working conditions . . . and it is reported that efforts will be made further to strengthen the Wagner-Connery Labor disputes act. . . . Apparently

the Ellenbogen bill will be in the nature of a modified NRA but more comprehensive than Ellenbogen's old bill to set up a little NRA for the textile industry. . . . It is also evident that an effort will be made to enact a revised Guffey coal act. . . . The original act was killed by the Supreme Court. . . . It is said that agreement has been reached by prominent New Dealers to reintroduce a new coal bill at the demand of the United Mine Workers and to so broaden it as to include the anthracite as well as the bituminous coal industry. . . .

Even within the New Deal administration, however, there is opposition to the idea of industrial regimentation. . . . From the birth of the Blue Eagle to its death NRA zealots nursed a grievance against Secretary of Commerce Roper. . . . The Secretary never openly showed hostility toward the old bird and naturally would not inasmuch as loyalty to the New Deal family would not permit . . . yet he certainly never displayed any enthusiasm for it, from its most blatant screams to its final feeble squawks . . . and only last Thursday Secretary Roper assured the Business Advisory Council for the Department of Commerce that it is not his desire to suggest a revival of the NRA. . . . He made this point in suggesting the use of NRA studies, turned over to the department, to serve business needs by setting up a unit or units within the department to be charged with

the responsibility of pursuing study and research in the field of industrial economics. . . . There is a vast amount of material encompassed in these studies, but it is suspected that the idea of setting up still another business unit, even under the sympathetic direction of Mr. Roper, will not carry much appeal. . . . Mr. Roper repeated a suggestion often made previously by him that there is a great field of service for the Council, made up of industrialists, by way of encouraging a five to 10-year well-engineered home-building program. . . . It is Mr. Roper's idea that such a program would take up a great deal of employment slack and would stimulate activity with consequent reemployment in other fields. . . . He manifested a rather easy, optimistic tone—flavored, it is strongly suspected, with a political tinge—in speaking of the depression as being past and painting the business situation in unduly bright colors. . . . But in view of the campaign now under full blast this is understandable . . . at least Mr. Roper has sought cooperation between the administration and business . . . but he has been badly handicapped, seeing that recommendations of the Council have received scant, if any, consideration at the White House.

Nor is it likely that Mr. Roper's opposition to revival of NRA would mean much . . . the greatest force against renewal of regimentation, in the event Mr. Roosevelt is reelected, will be sufficient hostility in the new Congress to prevent the strait-jacketing job . . . and it may be said there seems a strong prospect of such a development . . . though many things can happen between now and Nov. 3.

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Robinson-Patman Act Will Fail, Says Eaton

"In general, there have been three political motifs in all the laws regulating competition from the Sherman Act right on down through NRA and to the enactment of the Robinson-Patman bill," said Harry Eaton, associate editor of Whaley Eaton Service, Washington, in an address before the first monthly meeting of the Purchasing Agents Association of New York, Sept. 15, 1936.

Continuing, Mr. Eaton said these three points are: "An attack on prices for the benefit of the ultimate consumer, the protection of the so-called 'little fellow,' both producer and distributor, from the so-called 'big fellow'; and the statutory support of employees in re-

gard to better wages and working conditions."

Mr. Eaton said that nearly every law on this subject has wholly confused these three motifs, has "contained some mutually irreconcilable objectives," and has "utterly failed of its purposes." "In my judgement," he continued, "the latest effort, the Robinson-Patman bill, will prove of no material benefit to its supposed beneficiaries and such teeth as it has will be gradually filed down by the courts."

Mr. Eaton predicts that this bill will be a constant annoyance to everyone who buys and sells goods, and that, when their disillusionment becomes apparent, they will begin a struggle for a new law for the regulation of competition. Some of Mr. Roosevelt's advisers, thinks Mr. Eaton, are confident that the Robinson-Patman act will prove as disappointing in the protection of the "little fellow" as have the Sherman, Clayton and Federal Trade Commission acts.

Accordingly, the President may, Mr. Eaton believes, when this feeling of disillusionment comes, inject upon the scene the subject of cooperatives, which a committee has been studying abroad. "It is quite obvious," said Mr. Eaton, "that a Federal subsidy, through taxation or otherwise, for 'socially desirable' cooperatives, and a corps of Federal experts to advise in their formation, would have an exceedingly strong appeal for certain groups. A 'socially desirable' cooperative, of course, is one which agrees to pursue labor and other competitive practices which Washington, from time to time, considers nice.

"In conclusion . . . the immediate picture appears so rosy to most business and economic analysts with whom I have talked that it almost scares one. Aside from the uncertainties of labor behavior after the elections, the big question seems to be whether the normal, inter-cyclical reaction, with, say, a six-months' decline in the market and in production, will come around the middle of 1937 or be postponed a year or two by a violent boom. We lean to the former view."

Japan to Mine Ore In Australia

[LONDON (Special Correspondence).—A formal agreement will shortly be signed between the Japan Mining Co. and T. V. Salt, engineer and representative of

H. A. Brassert & Co., London, for the exploiting of iron ore deposits on the Yampi Sound, Northwest Australia, where the Brassert firm has purchased certain leases.

The agreement provides for the formation of a joint Anglo-Japanese concern by the Japan Mining Co. and Brassert & Co., which will advance about 6,000,000 yen to a new mining company. This mining company will be formed in Australia as a subsidiary of

Brassert & Co. to exploit the Yampi leases. A further provision is that the Anglo-Japanese joint concern will undertake the transport and sales of the iron ores worked by the mining company.

The construction of the equipment for mining and shipping the ores will be started this winter and completed in 1937. It is hoped that 500,000 tons of iron ores will be shipped annually from Yampi to Japan, starting in 1938.



"**L**et's call Houde on this."

"Houde! Aren't shock absorbers their only specialty?"

"No, no! They turn out all kinds of precision metal work from single parts to complete mechanisms. You ought to see their plant and their equipment—and, most of all, their men!"

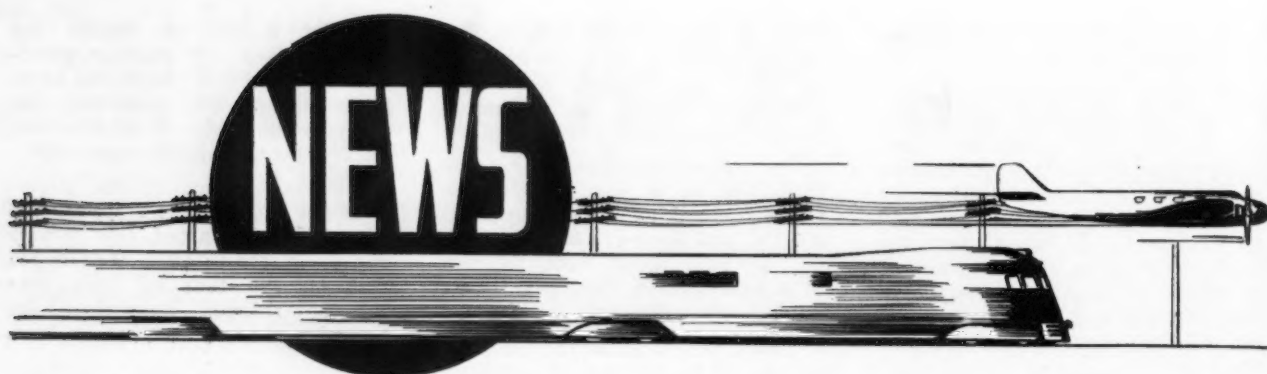
"Well, what are we waiting for, then? Let's send them a blueprint and get an estimate."

HOUDE

ENGINEERING CORPORATION

BUFFALO, N. Y.

DIVISION OF HOUDAILLE-HERSHEY CORPORATION



Carnegie-Illinois Employees Ask Flat Increase of \$1.12 a Day

THROUGH chosen representatives, over 61,000 employees of Carnegie-Illinois Steel Corp. have voiced their disapproval of the no-raise statement issued recently by the company's president, Benjamin F. Fairless, and have reiterated requests for wage increases and changed working conditions.

The first group to take advantage of Mr. Fairless' invitation to "air their views" was the Homestead works committee, which not only disagreed with the statement, but requested a flat \$1.12 a day increase for all workers. This, if granted, would bring about a \$5 a day wage minimum. It is estimated that such a raise would cost the Carnegie-Illinois Steel Corp. \$25,000,000 annually, while the cost to the United States Steel Corp. would run over \$45,000,000 a year. The committee, representing 10,000 employees, suggested that in case

management could not agree with their requests the issue be settled by arbitration which, they say, is provided for in the plan of employee representation.

Various Requests Presented

A second group, representing 23,000 sheet and tin plate workers, after a four-day session at Pittsburgh last week, requested a \$1 a day increase for all workers and asked for numerous revisions in working conditions. This group presented its requests at a meeting attended by 36 employee representatives, 12 plant superintendents and 12 management representatives. Among major requests covered in a voluminous report prepared by the committee were:

1. Establish a pension plan with a \$60 minimum and \$100 maximum.
2. Extend vacations with pay to one week for employees of less

than two years' service and one additional day for each year's service to a maximum of two weeks. (One week with pay now given to those in service five or more years.)

3. Continue insurance for retired employees. (Retired employees not now covered by group insurance.)

4. Establish seniority rights similar to those on the railroads.

5. Reveal all wage, salary and hours worked data, in any department, to employee representatives.

6. Make all changes affecting employees through the employee representatives.

7. Grant employees to be laid off or discharged a hearing with management and his employee representative before action is taken.

Answer May Be Delayed

Owing to the comprehensive nature of these demands it is not likely that management will answer for several weeks. In discussing pensions, the employee committee requested that the "best" 10 years' earnings be used as a base instead of the present practice of using the last 10 years. The pension question is apt to be far

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CONSIDER ALL THREE



PRODUCTION PRECISION FLEXIBILITY

In Baker machines for drilling, boring or tapping operations, there are these three considerations of dollars and cents value to manufacturing.

High production efficiency is built in with Baker experience and engineering.

Precision is expected and assured with Baker machines.

Flexibility, designed into Baker machines, is invaluable when change-over is required by different specifications or new parts. Units are standardized as much as possible.

These three features, and many more, make it desirable to consider our machines when tooling for drilling, boring or tapping. Submit a sample part or blueprint for a prompt recommendation from our engineering department.

BAKER BROTHERS, INC., TOLEDO, OHIO

BAKER

more difficult than appears, in view of mandatory payments which all companies must make to the government next year when deductions begin for the Federal old age fund. Some companies have been forced to drop their pension plans since the old age pension law requires payments regardless of whether the company has a plan of its own.

Two other groups, representing employees at Carnegie-Illinois Mingo Junction and Youngstown, Ohio plants, presented requests for increases and at the same time disagreed with that part of the Fairless statement that no wage increases were possible at this time.

The Youngstown group suggested that United State Steel preferred stock be refinanced in order that money might be raised for a wage increase. They also indicated that, although they felt Mr. Fairless was sincere in his explanations, they believed that the "lower bracket" workers were underpaid and should be granted an increase at once.

In addition to the groups making new wage demands last week, employees in the Carnegie-Illinois Clairton, Pa., Gary, Ind., and South Chicago plants have through their employee representatives demanded higher wages. The Clairton, Pa., representatives have submitted a long list of questions which inferentially challenge the company's position that it cannot afford a pay raise.

Republic Steel to Have Farm Bureau

IN the creation of an agricultural extension bureau and the appointment of Earl D. Anderson as agricultural engineer in charge, Republic Steel Corp. is recognizing



E. D. ANDERSON

the need for closer affiliation between the agricultural and the steel industries.

Republic is at present pushing the construction of a new \$1,500,-

000 wire mill at South Chicago which will produce a complete line of farm fencing by a new electro-galvanizing process.

In commenting on the creation of an agricultural extension bureau T. M. Girdler, president and chairman of the board of Republic said:

"As newcomers in the farm field our surveys indicated that it would be the height of commercial selfishness for us to enter the market with the idea of getting all we could out of agriculture without contributing generously toward the solution of those problems which have to do with the proper and most economical use of steel products on the farm. Too long has the steel industry been neglectful of its opportunity and obligation to cooperate with agricultural leaders in major activities looking toward the improvement of rural conditions.

"The farmers' consumption of steel has been accepted as a matter of course and the industry has done little or nothing in the way of organized, practical research to enable rural customers to use its products most efficiently and economically."

Mr. Anderson comes to Republic with a thorough knowledge of farm problems. Raised on the farm, he was graduated from Iowa State College with a master's degree in agricultural engineering. He is co-author with Prof. Henry Giese, of Ames, of two publications; namely, "Tests of Laminated Bent Rafters," and "Rural Fire Waste in Iowa." For a time he was associated with the U. S. Government as farm representative of the Federal Housing Administration in Iowa. Before joining Republic he was associated with the Farmers' Mutual Reinsurance Association.

Mr. Anderson's new activities will be on a national basis in contacting the U. S. Department of Agriculture, American Society of Agricultural Engineers, agricultural colleges, 4H clubs, county agents and farm association officials. The new bureau will be located in Chicago.

The twelfth National Exposition of Power and Mechanical Engineering to be held in New York at Grand Central Palace, Nov. 30 to Dec. 5, will have three floors of machines and products on display. There will be displays of boilers and heaters, electrical equipment, instruments, refractories and insulation, piping, valves, and fittings, steam accessories, transmission equipment, and metals and alloys.

The NEW **WELDIT** *Automatic* MODEL A
WELDING TORCH
with GASAVER in Handle

**SAVES FUEL...
...CUTS COST**

Thumb controlled Gasaver in handle cuts welding flame to pilot light size instantly when torch is not in actual use. Savings not affected by hose length. No re-lighting, no re-adjusting. Safe and simple to operate.
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TEST THIS WELDING TORCH FREE
FOR TWO WEEKS IN YOUR PLANT

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*From Raw Material
to Finished Product*

I am **YOUR REPRESENTATIVE** in this organization. To coordinate our facilities, to render the utmost in **SERVICE** to you, is my specific task.

*Ohio Ferro-Alloys Corporation
Canton, Ohio*

Steel Imports Increase 173% In First Year of Belgian Agreement

IMPORTS from all sources of iron and steel products on which import duties were reduced by the reciprocal trade agreement with Belgium increased 173 per cent in value during the first year of the agreement, according to a comparison made by American Iron and Steel Institute based on official statistics.

Under the Reciprocal Trade Agreement Act the terms of the agreement relative to reduced duties applied to imports not only from Belgium but also from all other countries.

In the 12-month period following May 1, 1935, when the Belgian agreement became effective, \$2,310,000 worth of the iron and steel products covered by the agreement was imported into the United States from all countries. The tonnage represented was 68,656 gross tons. In the year preceding the treaty imports of those products aggregated only 26,976 gross tons valued at \$845,000.

In the first year of the agreement the value of imports of all classes of commodities on which duties were lowered amounted to \$15,200,000, compared with \$9,100,000 in the year preceding the agreement.

Increased imports of iron and steel products under lower duties represented \$1,465,000 or 24 per cent of the total increase of \$6,100,000.

Study of the official import records reveals that steel producing countries other than Belgium received far more benefit from the lower duties than did Belgium.

The value of imports of iron and steel from Belgium at reduced duties in the first year of the agreement was 72 per cent above the value of imports of the same products in the year preceding the agreement. Imports of the same group of products from all other countries, however, rose 436 per cent over the same period. In tonnage, the imports from Belgium rose 68 per cent while imports from all other countries increased 393 per cent.

If an equivalent of the increased tonnage of imports of those products had been made in this country, about eight weeks of work would have been created for 1000 miners, and more than 8 1/3 weeks' work for 1000 employees of ore and coal-carrying railroad and steamship lines, in addition to 39 weeks' employment for 1000 workers in the steel mills.

Steel exports, nearly all of which go to countries which either make no steel or not enough to meet home needs, increased but little in the year following the agreement, rising only 3 per cent in tons, 16 per cent in value.

Westinghouse and G. E. Share Profits

SEMI-ANNUAL distribution of profits of the General Electric Co. to its employees, under the new general profit sharing plan set up by the company a year ago, will be made soon after Oct. 1. It is stated that the profit sharing for the first six months of 1936 would be approximately double the rate for 1935.

Under the Westinghouse Electric & Mfg. Co. annuity plan, \$386,195 was paid to 1179 pensioned employees during 1935. Since 1929, when the annuity plan was placed in operation, a total of \$1,748,253 has been paid to annuitants.

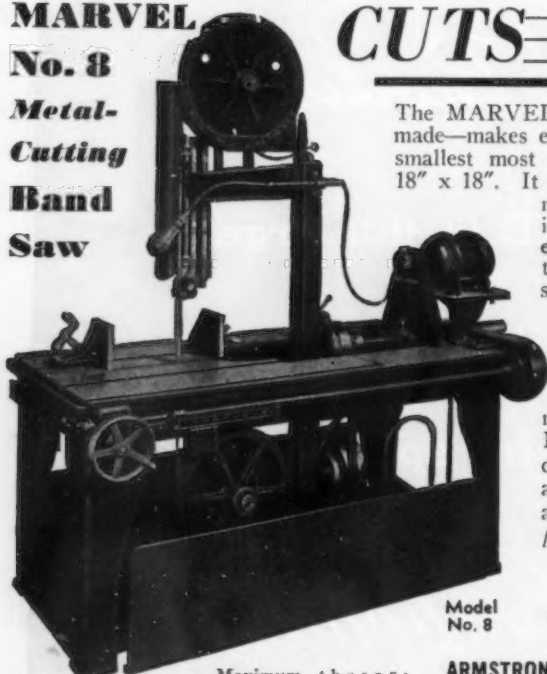
Due to the increased obligations imposed by the Social Security Act, the company portion of the annuity plan was discontinued on Dec. 31, 1935. Employees still have the privilege, however, of purchasing units at favorable group rates.

Canned Wine Now On the Market

ENCOURAGED by the reception given canned beer, tin plate and can companies are now welcoming, as the latest newcomer to the ranks of can users, the wine makers. Canned in a vacuum, instead of under pressure, as is the case with beer, wine in this form has already met with encouraging success on the West Coast, is being distributed now throughout New England, and by the end of the month is expected to be available in New York stores.

The Eastern Wine Co. is said to have 15 carloads of bulk wine en route to New York for canning from its California vineyards, and is enthusiastic over the prospect of increased consumption due to this container alteration. Great care is being taken by can companies to protect the natural flavor and taste of the wine, special lining, similar generally but differing in several important respects from that employed in beer cans, being used within the cans.

MARVEL No. 8 Metal- Cutting Band Saw



Maximum throat: depth 18 3/4 inches, height 21 inches. Cuts straight or at 45° without moving work. Power or hand feed—compensating blade pressure.

CUTS—Metal to 18" by 18" —Hours to Minutes —Cutting-Costs to a Fraction

The MARVEL No. 8 is the most universal saw made—makes every type sawing cut, handles the smallest most delicate job or big work up to 18" x 18". It cuts to size and shape—eliminates much tedious shaping and roughing. It turns "warehouse cutting extras" into profits. Cuts inventory investment, for with a few stock sizes you can cut your own die plates, etc. It will end costly delays; will keep other machines running.

In tool rooms, die and general machine shops you will find the MARVEL No. 8 the busiest machine tool on the floor. Its speed, accuracy, easy operation, and all-around utility keeps it building profits in innumerable ways.

Model
No. 8

Write for
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ARMSTRONG-BLUM MFG. CO.

"The Hack-Saw People"

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Tentative Color Code For Bars Prepared

THE Division of Simplified Practice, National Bureau of Standards, has mailed copies of a proposed simplified practice recommendation for a color code for marking steel bars to all interests for consideration and approval.

This proposal was originally submitted to the industry on Aug. 27, 1935, but so many constructive suggestions were received that it was found advisable to revise the color code to insure more general acceptance. The revised color code will be promulgated when an adequate volume of acceptance has been recorded.

Mimeographed copies may be obtained without charge from the Division of Simplified Practice, National Bureau of Standards, Washington.

Molding and Pattern Making Awards

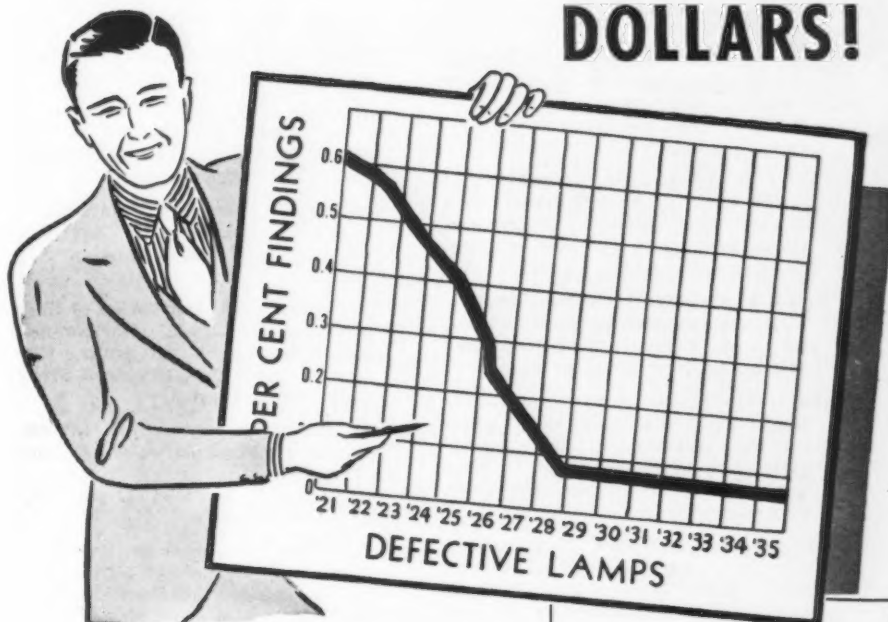
THE American Foundrymen's Association, Chicago, has announced that the molding and pattern making contests, which met with such success at the May, 1936, convention, will again be held in 1937.

The contests will be sponsored by the association's committee on foundry apprentice training, and competition will definitely be held in steel molding, iron molding and pattern making classes. If sufficient interest is evinced in the non-ferrous field, a competition will be authorized in that classification also.

First, second and third prizes of \$40, \$25 and \$15 will be awarded in each class from entries sent to the 1937 convention. Regulations of the committee provide that local contests may be held under the supervision of individual foundries or of foundry groups.

Reinforced concrete joist construction for floors and roofs is the subject of a 28-page booklet being issued by the Concrete Reinforcing Steel Institute, 201 North Wells Street, Chicago. Included in the booklet are safe load tables as well as specifications for reinforcing steel and concrete of 3000 lb. strength, as well as specifications for metal lath ceiling constructions of various types.

A glance at this chart MAY SAVE YOU LIGHTING DOLLARS!



● **FREEDOM FROM DEFECTS**—Tests on over 10,000,000 lamps have revealed that less than 1/10th of 1% of G-E MAZDA lamps have defects that affect their performance in service. The chart shows how research and the precision methods of manufacture have almost completely eliminated, from lamps made by G-E, defects that affect their performance in service.

THE TRUE COST of light is the cost of electricity as well as the cost of the lamps. When you buy lamps, it is well to remember you are also signing up for the current these lamps will use during their life. Repeated scientific tests by recognized laboratories show that many poor quality lamps are as much as 30% less efficient than G-E MAZDA lamps. This means that many an inferior lamp marked 100 watts actually produces less light than a 75-watt MAZDA lamp. You couldn't afford to use some of these lamps even if you got them free and each one came wrapped in a dollar bill. Even though present day electric rates are lowest in history, there is no use paying for wasted current.

Next time you buy lamps, get your money's worth by asking for G-E MAZDA lamps. They *Stay Brighter Longer* and don't waste current. General Electric Company, Nela Park, Cleveland, Ohio.

GENERAL ELECTRIC
MAZDA LAMPS

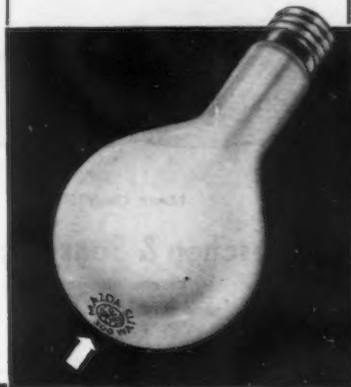
They stay brighter longer

Light-Sensitive Cell



G-E LIGHT METER

● Every business executive should have a G-E Light Meter. It measures lighting just as simply as a thermometer measures temperature... and indicates whether your lighting is up to modern safe-seeing standards. Small, handy, compact, the Light Meter is ruggedly made and costs only \$11.50.



CONVENTIONS

Sept. 28 to Oct. 3—American Mining Congress, Civic Auditorium, Denver.

Oct. 1 to 2—Porcelain Enamel Institute, Hotel Statler, Cleveland. George P. MacKnight, 612 North Michigan Avenue, Chicago, secretary.

Oct. 5 to 7—National Industrial Advertisers Association, Benjamin Franklin Hotel, Philadelphia. M. R. Webster, 100 East Ohio Street, Chicago, secretary.

Oct. 5 to 10—Fourth Industrial Materials Exhibit, Hotel Roosevelt, New York. S. S. Kahn, Parker-Kalon Corp., 200 Varick Street, New York, secretary.

Oct. 8 to 10—Electrochemical Society, Hotel General Brock, Niagara Falls, Ont. Dr. Colin G. Fink, Columbia University, New York, secretary.

Oct. 15 to 17—Society of Automotive Engineers, first national aircraft production meeting at Ambassador Hotel, Los Angeles. John A. C. Warner, 29 West 39th Street, New York, general manager.

Oct. 16—Eastern States Blast Furnace and Coke Oven Association, meeting with Chicago District Blast Furnace and Coke Oven Association, Palmer House, Chicago. B. A. Standerline, Wisconsin Steel Co., Chicago, secretary, Chicago association.

Oct. 18 to 22—American Institute of Mining and Metallurgical Engineers, Hotel Statler, Cleveland. Louis Jordan, 29 West 39th Street, New York, secretary.

Oct. 19 to 22—National Wholesale Hardware Association, Marlborough-Blenheim Hotel, Atlantic City.

George A. Fernley, 505 Arch Street, Philadelphia, secretary.

Oct. 19 to 22—Wire Association, Hotel Cleveland, Cleveland. Richard E. Brown, 17 East 42nd Street, New York, secretary.

Oct. 19 to 23—American Society for Metals, Metal Congress and Exposition, Public Auditorium, Cleveland. W. H. Eisenman, 7016 Euclid Avenue, Cleveland, secretary.

Oct. 19 to 23—American Welding Society, Hotel Cleveland, Cleveland. M. M. Kelly, 33 West 39th Street, New York, secretary.

Oct. 19 to 23—American Gas Association, Auditorium, Atlantic City. Kurwin R. Boyes, 420 Lexington Avenue, New York, secretary.

Oct. 20—National Association of Sheet Metal Distributors, Marlborough-Blenheim Hotel, Atlantic City. George A. Fernley, 505 Arch Street, Philadelphia, secretary.

Oct. 21 to 23—American Institute of Steel Construction, Greenbrier, White Sulphur Springs, W. Va. V. G. Iden, 200 Madison Avenue, New York, secretary.

Oct. 22 to 23—American Society of Mechanical Engineers. Fall meeting of iron and steel, machine shop practice and applied mechanics divisions, Hotel Cleveland, Cleveland. C. E. Davies, 29 West 39th Street, New York, secretary.

Nov. 18 to 20—National Foreign Trade Convention, Chicago. Lindsay Crawford, 26 Beaver Street, New York, secretary.

Nov. 18 to 20—International Acetylene Association, Jefferson Hotel, St. Louis. Association headquarters, 30 West 42nd Street, New York.

Nov. 30 to Dec. 4—American Society of Mechanical Engineers, annual meeting, Engineering Societies Building, New York. C. E. Davies, 29 West 39th Street, New York, secretary.

Nov. 30 to Dec. 7—National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York. Charles F. Roth, International Exposition Co., manager.

Payrolls Take More Of Steel Dollars

THE share of each dollar received from the sale of the steel industry's products which goes to employees in the form of wages has increased by more than 50 per cent since the beginning of this century, the American Iron and Steel Institute has calculated.

For each dollar's worth of products sold last year the employees of the industry received 41c., while 35 years ago only 27c. out of each dollar of sales went into payrolls.

During the same period the proportion of the industry's sales income collected in taxes by Federal, state and local governments increased about 800 per cent, from half a cent out of each sales dollar to 4½c.

These increases in the share of the industry's income going to employees and to tax-collecting agencies were made possible by reductions in the amount paid to stockholders of the industry and by improvements in operating efficiency.

At the beginning of the period the stockholders of the industry in return for the use of their funds received 12½c. out of each dollar of sales, but in 1935 they received only 1½c.

Meanwhile operating costs other than payrolls and taxes were being reduced from 60c. to 53c. out of each dollar in sales.

In 1929, when the average annual earnings of steel employees were the highest of any year on record, payrolls took 35c. out of each steel dollar, a percentage which has been exceeded in each succeeding year.

Whiting Corp., Harvey, Ill., has completed arrangements with the Griffin Wheel Co., Chicago, whereby Whiting will manufacture and sell the Griffin hot blast process for cupolas. The Whiting Corp. will continue to handle its pulverized-coal-fired and stoker-fired type of hot blast.

"HERCULES" WIRE ROPE

RED-STRAND

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Furnished in Flattened Strand, Round Strand, Preformed, Steel Clad and Non-Rotating constructions.

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in Strength and
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..PERSONALS..

EVERETT CHAPMAN, who has been vice-president since 1934 of Lukenweld, Inc., Coatesville, Pa., has been elected president of the company. He succeeds G. DONALD SPACKMAN, who has been promoted to general superintendent of the Lukens Steel Co. ROBERT J. WHITING, heretofore superintendent of Lukenweld, Inc., in charge of manufacturing, has been elected vice-president of Lukenweld, Inc. Mr. Chapman, who has made outstanding contributions to the welding art, was graduated from the Uni-



EVERETT CHAPMAN

versity of Michigan in 1923. After a year's graduate work in physics he became instructor in electrical engineering at Purdue University. In 1925 he joined the Lincoln Electric Co., Cleveland, as experimental engineer, and resigned in 1930 to become director of development and research of Lukenweld. Robert J. Whiting joined the company in May, 1934, after an extended experience with the Fisher Body Corp. He joined the Fisher company in 1923 as production engineer and supervised the erection of body plants and equipment at many points throughout the country. His first industrial connection was with the Keller Mfg. Co., which he joined in 1906. He then became identified with the Pickering Engineering Co., Hartford, Conn., where he was engaged in problems of structural design, and in 1913 became master mechanic on plant equipment for the Ford Motor Co., later being promoted to superin-

Accionamientos a cadena en la Industria Molinera

Por el Dep. Téc. de C. I. M. A. P. I.

DESPUÉS de numerosos y prudentes ensayos, en los cuales se ha podido apreciar las grandes ventajas ofrecidas por este sistema de transmisión, puede afirmarse que ha sido adoptado en la mayoría de las nuevas instalaciones. Las fotografías que ilustran el presente artículo se han obtenido de los Molinos Río de la Plata donde una sección ha sido completamente transformada con los accionamientos mencionados.

En estas fotografías es fácil apreciar la nitidez y el reducido espacio ocupado por los grupos motores que son de 100 y 60 HP.

La cadena elegida ha sido la de tipo "a rodillo" DIAMOND de 1" de peso en cualquier caso para los primeros y de 1" en triple para los se-

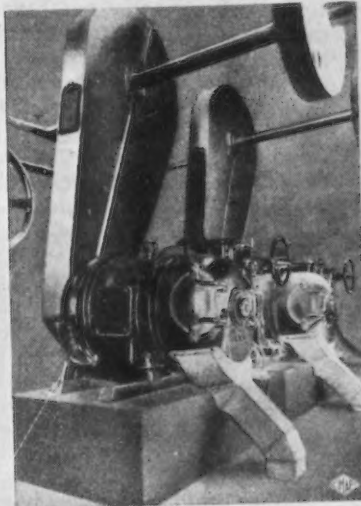
Todo el cuidado se limita al cambio periódico del aceite de lubricación.

Las transmisiones con correa anchas y a larga distancia necesitan una gran tensión para evitar el patinaje. Esta tensión se logra rápidamente los ejes y cojinetes, produciendo o menuda el resacaamiento o de estos últimos.

La cadena trabaja sin tensión asegurando mayor duración a los cojinetes y menor consumo lubricante.

Permite accionamiento de máquinas o movimientos a velocidades muy reducidas para los que no se pueden emplear los correa.

La cadena a rodillo es mucho más flexible que la correa, asegura un posi-

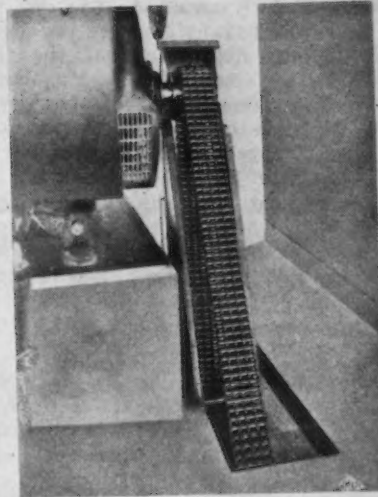


N. 1 - 3 Accionamientos a cadena de 100 HP cada uno

gandos habiendo en la instalación a que nos referimos unos 10 accionamientos similares.

En la fotografía N. 2 se puede apreciar una de esas cadenas con la parte superior del protector levantada. Este tipo de cadena permite emplear engranajes de un diámetro muy reducido, y son muy silenciosas.

La creciente demanda de accionamientos de cadena a rodillo en la construcción de los molinos ha sido obtenida en instalaciones, funcionando algunas desde hace más de 10 años sin ningún contratiempo y sin tener que



N. 2 Un accionamiento de 100 HP con la tapa del protector levantada

rimo igual al de los engranajes y su rendimiento es muy superior a cualquier otro sistema.

Estos accionamientos tienen una gran elasticidad, y no requieren una gran presión en la determinación de la distancia de centros. Permiten ligeros desmontajes entre los varios elementos accionados.

Puede cambiarse rápidamente cualquier elemento de esos mandos, que siendo completamente estandarizados, es muy fácil reponerlos.

Reproduced from "Revista Molinera de La Republica Argentina"

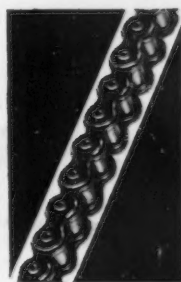
In the Argentine, too They use . . . High Efficiency DIAMOND CHAIN DRIVES

● In the factories of Argentine, too—Diamond Roller Chain Motor Drives are used extensively. ● The leading milling journal pictures and describes a series of 4-strand Diamond Drives used with 100 horsepower motors in a new mill and comments on their high efficiencies, maintained speed ratios—and the satisfactory performance regardless of dust, moisture or other conditions.

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Diamond Motor Drives transmit practically 100% of the power—they permit no slipping and thus keep the machines they drive up to maximum production output speed . . . They insure this cost-saving, high production performance for motors of every size . . . in fact, many production men have gained extra production from existing equipment by changing to Diamond Drives (over 10,000 in one plant alone).

For your convenience—distributors in 45 cities stock Diamond Motor Drives regularly. Equip your motors with these Drives and check production gains. DIAMOND CHAIN & MFG. CO., 433 Kentucky Ave., Indianapolis, Ind. Offices and Distributors in Principal Cities.



DIAMOND MOTOR DRIVES

THE EFFICIENCY OF MOTORIZED MACHINERY DEPENDS ON THE DRIVES

tendent of body construction at the Ford plant.

♦ ♦ ♦

ROBERT W. FRANK has been appointed assistant chief metallurgist of the Duquesne works of the Carnegie-Illinois Steel Corp., succeeding WILBERT A. SAYLOR, who has been transferred to the metallurgical department of the Ohio works, Youngstown. Mr. Frank is a graduate of the University of Pennsylvania and began his business career with the Jones & Laughlin Steel Corp. in 1921. He remained with the company until 1931, when he became connected for a short time with the Union Carbide & Carbon Corp. at Cleveland. He went to the Duquesne works as quality inspector in June, 1933.

♦ ♦ ♦

WILLIAM F. WISE, for the past nine years general sales manager of Ex-Cell-O Aircraft & Tool Corp., Detroit, is now president of the Republic Products Corp., 441 York St., Detroit. R. B. CRIDDLE, formerly sales manager of the machinery division of Ex-Cell-O, is secretary-treasurer of Republic Products. The new firm, which was

incorporated on Sept. 1, will manufacture precision parts for aircraft engines, refrigerator compressor units and automobiles, besides small special tools, punches and so-called tool details.

♦ ♦ ♦

E. M. PRIOR, who has been Chicago representative for the Pressed Steel Co., Wilkes-Barre, Pa., beginning Oct. 1 will represent the Rotary Electric Steel Co., Detroit, in the Chicago and western territory. Mr. Prior's new office will be in the Engineering Building, 205 West Wacker Drive.

♦ ♦ ♦

R. J. WILKINS has been appointed general manager of the Southern California division of General Motors Corp. He replaces W. S. ROBERTS, who has been transferred as general manager to Linden, N. J., where the corporation is erecting a large plant for the assembly of Buick, Oldsmobile and Pontiac cars. Mr. Wilkins has been with General Motors for 22 years, starting at the Flint, Mich., plant of the Buick Motor Co. In 1918 he joined the engineering staff of Fisher Body Co. and was later

manager of its Buffalo plant. Prior to his assignment to the executive staff of the Southern California plant last March, Mr. Wilkins was at Tarrytown, N. Y., for 12 years as manager of the Fisher plant there.

♦ ♦ ♦

LOUIS KUEHN, president of the Milcor Steel Co., Milwaukee, which recently became a division of Inland Steel Co., Chicago, was host to P. D. BLOCK, president, and 40 other executives from Chicago, including EDWARD RYERSON, head of the Ryerson division of Inland, on Sept. 16. The party, traveling in private cars, devoted the morning to an inspection of the Milcor factory, and the afternoon to a golf tournament at the Milwaukee Country Club, where Mr. Kuehn entertained at luncheon and dinner.

♦ ♦ ♦

HALLAM J. CLARK, assistant to production manager of the Wico Electric Co., has been made general credit manager of Harvey-Whipple, Inc., Springfield, Mass., manufacturer of oil heating equipment.

♦ ♦ ♦

RUFUS W. PAGE, for many years New England representative of pig iron furnaces, has been made president of the Coombs Motor Co., Watertown, Mass., Distributer of Ford automobiles.

♦ ♦ ♦

FREDERICK O. SCHRAMM has been appointed sales agent for the Fort Pitt Spring Co., Pittsburgh, in New York and vicinity, with offices located at 11 West 42nd Street, New York.

♦ ♦ ♦

WILLIAM F. HENNING, for the past 15 years assistant sales manager of the American Screw Co., Providence, has been appointed domestic sales manager, succeeding the late Albert B. Peck. WALTER BROMLEY, formerly sales representative in the Central States and the New England district, has been made assistant domestic sales manager. VINCENT RODDY, heretofore director of the planning and research division, has been appointed assistant to the general manager, EUGENE E. CLARK.

♦ ♦ ♦

H. H. STECK, formerly of the Norton Co., Worcester, Mass., has been appointed grinding wheel sales representative in the Pittsburgh district for the United States Rubber Products, Inc., New York. He has been engaged in selling

J&L ELIZA PIG IRON



Made without scrap especially for
the foundry and malleable trade

**J&L
STEEL**

JONES & LAUGHLIN STEEL CORPORATION
AMERICAN IRON AND STEEL WORKS
PITTSBURGH, PENNSYLVANIA

grinding wheels in that district for the past 20 years.

❖ ❖ ❖

HARRY C. HICKS, who has been associated since 1913 with the New York Belting & Packing Co., New York, has been appointed sales manager of the Chicago district, with headquarters at 3550 South Morgan Street.

❖ ❖ ❖

S. J. GARAHAN, who has been identified with the General Electric Co. since 1904, has been made manager of sales of the cable section of the company's central station department. He succeeds R. C. BELLEZZA, who has become associated with the Locke Insulator Corp., Baltimore, as vice-president and manager of sales.

❖ ❖ ❖

WALTER L. BERGHOEFER, heretofore manager of industrial sales of the Westinghouse Air Brake Co., has been appointed manager of casting sales of the Continental Roll & Steel Foundry Co., East Chicago, Ind. Prior to his Westinghouse connection, Mr. Berghoefer was for many years vice-president of National Steel Foundries, Milwaukee.

❖ ❖ ❖

ERWIN J. BOETTCHER has been made Wisconsin district representative for the Acme Steel Co., Chicago. He will make his headquarters at 312 East Wisconsin Avenue, Milwaukee, and is to handle the sale of hot and cold-rolled, galvanized and stainless steel strip.

❖ ❖ ❖

CALVIN VERITY, executive vice-president of the American Rolling Mill Co., Middletown, has been elected a member of the board of the Rustless Iron & Steel Corp., to fill the vacancy created by the death of GEORGE M. SEAMAN.

❖ ❖ ❖

J. T. HOWAT, formerly with the Pittsburgh Steel Foundry Corp., has been appointed chief metallurgist and superintendent of the heat-treating department of the American Spiral Spring & Mfg. Co., Pittsburgh.

❖ ❖ ❖

WILLIAM P. YANT, heretofore chief chemist in the health division of the United States Bureau of Mines, has been appointed director of research of Mine Safety Appliances Co., Pittsburgh. He has directed much of the fundamental work on the dangerous properties of gases, and development, testing

and approval of gas masks and respirators for mine and industrial use.

❖ ❖ ❖

FREDERICK S. COOK, since 1919 vice-president and secretary of the McCracken-Ripley Co., Portland, Ore., has been appointed Pacific Coast manager for the Robert W. Hunt Co., Chicago. He will make his headquarters in San Francisco. He is a graduate of Columbia University and from 1905 to the

beginning of the War was engaged in operations and examination of lead and zinc properties at Joplin, Mo.

❖ ❖ ❖

JOSEPH A. HAGUE has been appointed district sales manager of the newly established Cleveland district office of the Pittsburgh Steel Co., Pittsburgh. The office will be located at 1811 Union Trust Building and is to serve the state of Ohio.



Yes sir, this boy has reason to be happy. He can "go to town" when he moves heavy castings from shakeout to cleaners. He pulls the rope and the MonoTractor "takes it away".

In this large Southern foundry where costs are low, the

American MonoTractor keeps down handling labor.

Learn more about this rubber wheel drive unit for hoists, cranes and carriers from our engineers, or, write for the 24-page book describing the American MonoTractor.

AMERICAN MONORAIL CO.

13103 Athens Ave., Cleveland, O.



...OBITUARY...

SHERARD OSBORN COWPER-COLES, inventor of the sherardizing process of galvanizing iron, died at Sunbury-on-Thames, England, on Sept. 9, in his 70th year. Mr. Cowper-Coles devoted most of his life to problems connected with the electro deposition of metals. He invented a number of electrolytic processes for making, among other uses, iron and copper tubes and sheets, for the recovery of zinc from its ores, and for aluminum welding without a flux. Mr. Cowper-Coles was a member of the Institution of Electrical Engineers, the American Institute of Electrical Engineers, the Iron and Steel Institute, and the American Electrochemical Society. He was a founder of the Faraday Society, and contributed many valuable technical papers to the institutions of which he was a member. At the Franco-British Exposition of 1908 he was awarded the grand prix for electrochemistry.

♦ ♦ ♦

J. A. RICHMAN, a member of the firm of I. Richman & Co., scrap dealers, Washington, Pa., died in

Washington Hospital, that city, on Sept. 11, aged 40 years.

♦ ♦ ♦

J. H. BREWSTER, who founded the American agency of the Swedish Steel Mills, died at his home in Westport, Conn., after an illness of several weeks on Sept. 15. For his success in that undertaking and his services to Sweden during the World War, he received the decoration of the Order of Vasa from the King of Sweden in 1927.

♦ ♦ ♦

EMIL A. PETERSON, prominent industrialist in the Fox River Valley of Wisconsin, died on Sept. 13 at his home in Appleton, Wis., aged 71 years. He became connected with the Valley Iron Works, Appleton, a pioneer manufacturer of paper mill machinery, in 1898, as superintendent. In 1905 he was named treasurer and general manager, and in 1921 became president.

♦ ♦ ♦

L. H. FRANCIS, president, Kilby Mfg. Co., Cleveland, manufacturer of sugar-making machinery, died suddenly of a heart attack Sept. 20, aged 74 years. He was born in Wales. He was first employed by the Kilby company as a laborer and later was foreman, superintendent and general manager. As a manufacturer of castings used in making sugar-manufacturing machinery he was affiliated with the foundry industry and was a member of the advisory board of the Gray Iron Founders' Society.

E. R. Crawford Left \$1,500,000 for Needy

A TRUST fund of \$1,500,000 for the aid of needy Allegheny County citizens and particularly deserving employees or former employees of the McKeesport Tin Plate Co. was set up by the will of the late E. R. Crawford, president of the McKeesport Tin Plate Co., which has been filed.

To Study Needs of Railroads, Shipyards

THE Machinery Division of the Bureau of Foreign and Domestic Commerce has under consideration the making of a study to determine railroad and merchant marine equipment requirements necessary to place such requirements on a thoroughly efficient basis.

In the railroad field it is proposed to ascertain present ownership of cars, locomotives, machinery, and machine tools, and the condition, having in mind the matter of obsolescence and replacement with modern equipment.

Similar study is proposed as to requirements of shipyards as it relates to their ability to build merchant ships under the new Merchant Marine law. The new act, it is expected, will provide a strong stimulus to shipbuilding and therefore will call not only for modern machinery and equipment in yards but in plants supplying yards. It is also expected that it will stimulate the market for ship steel. Estimates have been made that for every \$100 applying to the cost of a ship about \$18.66 is expended for machinery and \$14 for steel.

Standard Marking for Valves and Fittings

A NEW edition of the MSS "Standard Practice" covering MSS standard marking system for valves, fittings, flanges and unions, SP-25-1936, has just been issued by the Manufacturers Standardization Society of the Valve and Fittings Industry, 420 Lexington Avenue, New York.

The method of applying the general rules for marking as set forth in SP-25 is more specifically visualized in this new edition by the inclusion of a number of tables definitely outlining the standard method of applying uniform markings to a wide variety of products.

GOING UP!

CORE oil prices are on the way up.

Vegetable oils in various combinations are almost always used as bases in the manufacture of core oil. These ingredients are subject to wide and costly price fluctuations.

That is particularly true now! Great Lakes CoroiL is unlike other core oil. It is a petroleum

derivative. Its price is not subject to wide and dangerous price fluctuations. And it's better core oil. Not new or untried, it is used in scores of foundries of every description.

In view of the menacing price situation, isn't it just good business to try out Great Lakes CoroiL in your own plant NOW?

Order a trial drum today.

GREAT LAKES FOUNDRY SAND CO.

Miners—Processors—Foundry, Metallurgical and Sand Blast Service
United Artists Building Detroit, Michigan

Prison Manufacturing Subject of Protest

AT a conference with the officers and directors of the Federal Prison Industries, Inc., at the Stevens Hotel, Chicago, on Sept. 17, a committee of manufacturing executives representing the Illinois Manufacturers' Association protested against the manufacture of products in the United States prisons in competition with Illinois manufacturing industries. The conference was participated in by the directors of the Federal Prison Industries, who were in Chicago for the purpose of attending the Prison Congress, and by a committee including officers of eight members of the Illinois Manufacturers' Association.

Under existing laws, the Federal prisons as well as the state prisons in most states are obliged to use prison labor in the manufacture of articles and supplies for the public institutions. Conformity to this law has deprived a number of Illinois industries of a very large potential market. The injury has been particularly acute in the case of industries engaged in the manufacture of office supplies, sheet metal furniture and school supplies.

C. M. White Stresses Importance of Good Foremen

(CONTINUED FROM PAGE 41)

foremen do not believe in the employee representation plan. They feel that the employee representative is an intruder who makes it difficult for the foreman to maintain discipline. Such old-fashioned foremen see no reason why a man should appeal from the foreman's decision to the employee representative, and why the management is so enthusiastic about this plan.

Mr. White emphasized the fact that a foreman who fights the employee representation plan is often afraid of his job; he is afraid that he isn't good enough to hold it unless he can be an autocrat and have the last word in his department. The up-to-date foreman takes pride in reducing appeals from his decisions to a minimum. He knows his men so well, and they know him so thoroughly, that they turn to him for advice and help before they turn to anyone else in the plant.

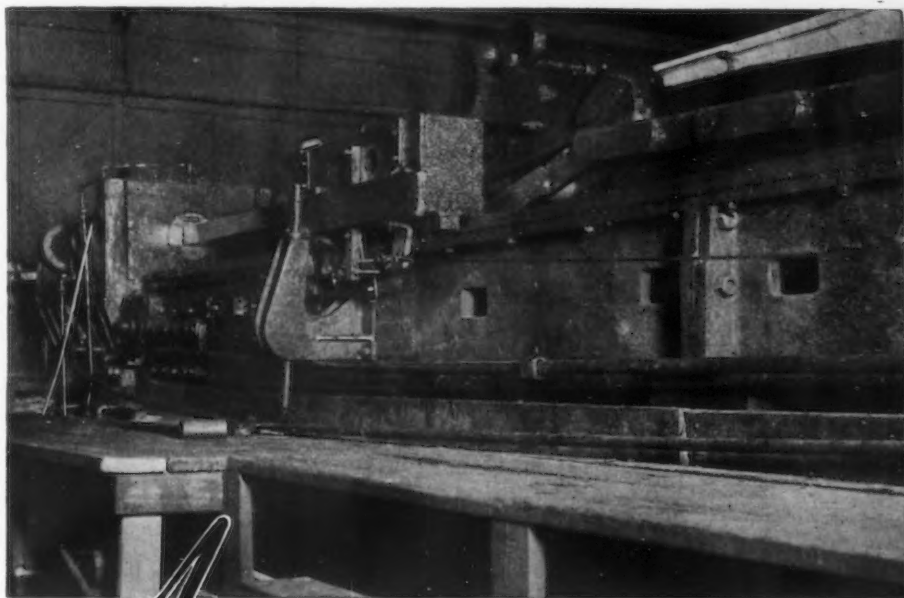
The foreman often must have considerable diplomacy to avert dis-

content. On the one hand he has a superintendent, and on the other side he has a lot of men who want all kinds of things, some reasonable, some unreasonable. The foreman stands in between and must act as an umpire.

In this, the foreman is no different than the president of a company. For the president has on one side the stockholders. On the other, are the same group of men

the foreman has to deal with, only multiplied many times.

Mr. White stated that "in these days it is too often considered the smart thing to dismiss the stockholder with a casual wave of the hand. Why should he get any share of the profits, a lot of people ask. It is obvious, however, that the stockholder is most important for he is the man whose money built the plant in which foremen work."



At your Service

UNUSUAL FACILITIES *for* UNUSUAL REQUIREMENTS *in* COLD DRAWN STEEL **WYCKOFF**

Whether your cold drawn steel requirements are extraordinary as to size and shape—or whether they involve an unusual combination of chemical and physical properties, WYCKOFF is equipped to serve you exceedingly well. Inquire about it.

WYCKOFF DRAWN STEEL COMPANY

General Offices: First National Bank Bldg., Pittsburgh, Pa.

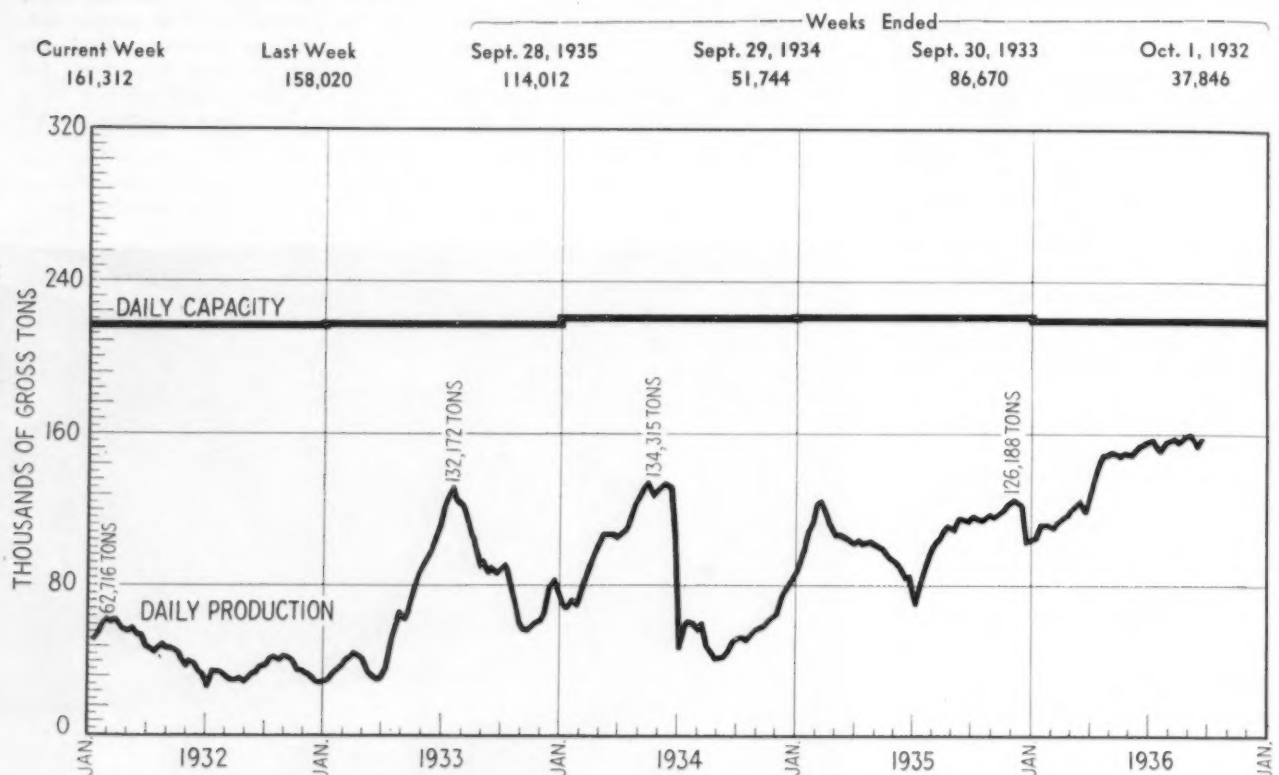
Mills at Ambridge, Pa. and Chicago, Ill.

Manufacturers of Carbon and Alloy Steels

Turned and Polished Shafting Turned and Ground Shafting

STEEL INGOT PRODUCTION

Daily Tonnage of Bessemer and Open-Hearth Steel Ingots Produced by Weeks, 1932-1936



Figures for the current week are not indicated on the chart until the following week.

STEEL INGOT PRODUCTION BY DISTRICTS: Per Cent of Capacity

District	Current Week	Last Week	Weeks Ended		
			Aug. 29, 1936	Sept. 28, 1935	Sept. 29, 1934
Pittsburgh	72.0	70.0	72.0	44.0	15.0
Chicago	73.5	73.0	73.0	59.0	26.5
Valleys	76.0	76.0	78.0	55.0	26.0
Philadelphia	56.0	51.0	55.0	38.0	18.0
Cleveland	74.0	74.0	76.0	66.0	24.0
Buffalo	79.0	75.0	77.5	40.0	24.0
Wheeling	95.0	95.0	96.0	80.0	26.0
Southern	60.5	60.5	60.5	46.0	25.0
Ohio River	85.0	85.0	86.0	71.0	30.0
Western	70.0	70.0	70.0	35.0	15.0
St. Louis	75.0	69.0	45.0	46.0	25.0
Detroit	100.0	100.0	100.0	90.0	76.0
Eastern	90.0	90.0	90.0	35.0	20.0
Aggregate	73.5	72.0	73.0	51.5	23.5
Average Year to Date	64.3	64.1	63.4	46.4	40.1

Weekly Booking of Construction Steel

FROM THE IRON AGE

	Week Ended				Year to Date	
	Sept. 22, 1936	Sept. 15, 1936	Aug. 25, 1936	Sept. 24, 1935	1936	1935
Fabricated structural steel awards.....	9,450	20,540	20,045	19,900	810,480	568,160
Fabricated plate awards.....	1,035	1,415	1,370	3,860	167,385	108,685
Steel sheet piling awards.....	1,835	0	0	125	42,175	46,960
Reinforcing bar awards.....	9,800	2,770	4,130	12,965	269,765	243,825
Total Lettings of Construction Steel, ..	22,120	24,725	25,545	36,850	1,289,805	967,630



...SUMMARY OF THE WEEK...

... Heavy buying lifts steel rate to 73½, year's highest to date.

° ° °

... Price advances drive in business; automotive orders also larger.

° ° °

... Scarcity of raw steel a limiting factor in finished output.

SUPPORTED by a fresh wave of heavy buying, steel production has advanced this week to 73½ per cent of the country's capacity, the highest rate of the year thus far. Further gains in output are likely to be limited by physical factors at the mills and not by the volume of business. Owing to restricted supplies of pig iron, scrap and coke and the fact that many open-hearth furnaces are still in disrepair, there is a scarcity of raw steel that is retarding operations of finishing mills.

However, steel companies are straining to eliminate production bottlenecks insofar as possible. A Buffalo steel plant has started its only idle blast furnace and one at Pittsburgh will also soon be in full pig iron production. Makers of refractories are busy supplying fire brick for the rebuilding of open-hearth furnaces and new construction is being rushed, two new 150-ton open-hearth units having been started at a Chicago plant, with two more scheduled for initial operation in October.

The scarcity of scrap has forced a large Pittsburgh district company to resort to use of Bessemer steel ingots as part of its scrap charge. Coke shortage has resulted in further large purchases of the beehive grade, including one lot of 72,000 tons and another of 45,000 tons, and additional beehive ovens, long idle, are being repaired for operation. Recent sales of beehive coke have been at an advance of 10c. a ton or more.

Some steel companies are expanding their shipping departments in an effort to eradicate complaints of customers on deliveries. A new element in the shipping situation is a shortage of open-top cars, which, though not yet acute, is causing some difficulties.

THE heavy volume of buying in the past week has been brought about partly by the desire of users to protect themselves as far ahead as possible on those products which are to be \$2 a ton

higher in price as of Oct. 1—hot-rolled annealed sheets in the lighter gages, hot-rolled carbon bars, cold-finished steel bars and semi-finished steel—but there has also been substantial buying of other products not affected by price advances, notably wire products on which reductions were recently announced, but which may be higher for fourth quarter.

A substantial amount of buying of sheets by the automobile industry, coupled with good miscellaneous demand, has given some sheet mills virtually full bookings through November, and in some instances for the entire fourth quarter. Deliveries on sheets and bars have become extended, some grades of sheets not being obtainable before late November.

Integrated steel companies, being short of semi-finished steel themselves, have been obliged to allot such material in reduced tonnages for fourth quarter to non-integrated mills.

WITH the completion by Ford Motor Co. of its run on 1936 models, the automobile industry probably reached its low point and within a week or 10 days volume production of new models by various plants will be under way. Steel requirements over the remainder of the year will be fairly heavy.

Fresh buying by some of the railroads has added to mill backlogs in the past week. The threat of car shortages and the inability to get steel on short notice have caused some of the roads to expand their store stocks. Several Western roads are about to enter the market for new cars, totaling about 5000. The Wabash will build 425 hopper cars, the Union Railroad has ordered 100 gondolas and the St. Louis Southwestern will buy five locomotives. The Central of Georgia has ordered 5000 tons of rails and a few thousand tons of track supplies.

The recent lull in structural steel lettings continues, but new projects include 4500 tons for two Federal housing projects in Detroit and 1900 tons for a bridge over the Connecticut River. A water pipe line at Everett, Mass., calls for 6000 tons of plates.

AN advance of 50c. at Pittsburgh and one of 25c. at Philadelphia have raised THE IRON AGE composite price for heavy melting steel scrap to \$16.75, where it is only \$1.93 below the pig iron composite price, the narrowest differential that has existed between these two basic commodities in more than 20 years.



...PITTSBURGH...

... Ingot output higher at 72% of capacity.

o o o

... Specifications for bars, sheets and wire products heavier.

o o o

... Beehive coke advances in price; steel scrap up 50c.

PITTSBURGH, Sept. 22.—Ingot output in the Pittsburgh district is up two points to 72 per cent of capacity, while the Wheeling district remains unchanged at 95 per cent. The main impetus for the increase this week in the Pittsburgh district comes from heavier specifications for hot-rolled bars, sheets and wire products.

Customers are anticipating their needs on those products which will be increased for fourth quarter delivery. While it is true that most of the improvement in specifications is due to customers taking advantage of present prices, there has been a marked disposition among consumers to check closely future requirements on account of uncertain deliveries from steel producers.

An increase in tonnages ordered by automobile makers has also added to mill backlogs. Analyses of hot-rolled bar and sheet bookings disclose a wide diversification.

Meanwhile, because of the possibility of an increase in merchant wire products, jobbers are ordering heavily. Fourth quarter prices on wire products are to be announced within the near future.

Bookings for heavy materials, such as plates and shapes, while not as great as a few weeks ago, are holding up well.

A sharp upturn in cold-finished bar specifications has occurred during the past week, and is attributable to customers anticipating their future needs in order to take advantage of present prices before the \$2 a ton advance for fourth quarter delivery becomes effective.

It now appears likely that from a production standpoint, mills in this district will be actively en-

gaged on hot-rolled bar, sheets, strip, wire, and cold-finished bar orders for quite some time. This precludes any sharp leveling off in the steel production rate in this district during the next month at least.

The raw material markets continue to show a strong tone. Two large beehive coke contracts have been closed in the past week, one involving 72,000 tons over a six-months' period and another 45,000 tons over a three-months' period. Reflecting this activity, beehive furnace coke, prompt, f.o.b. Connellsville, is quotable at \$3.75 to \$3.95, an advance of 10c. a ton in the lower range. Heavy melting steel has advanced 50c. a ton to the highest level since August, 1929.

Makers of refractory materials are extremely busy supplying steel mills for repair programs.

Pig Iron

Aggregate tonnages moving to consumers continue to improve and are traceable to the extreme strength in the scrap market. While it is true that there is little likelihood of increased prices for pig iron in the immediate future, there is a growing belief that a price rise might occur late this year. Some customers are asking for contracts which would protect them throughout the fourth quarter in case higher prices materialize. Continuation of high steel mill activity is being reflected in plans for blowing in additional steel work blast furnaces. One furnace at Lowellville is expected to be blown in shortly.

Semi-Finished Steel

A sharp increase in specifications for sheet bars has occurred in the past week. Rerolling billets, blooms and slabs are moving at re-

cent levels. Some steel producers are actually embarrassed by the amount of specifications for semi-finished steel. Their own stocks of billets and blooms were eliminated some time ago and many mills need every ton of raw steel for their own operations. This condition is resulting from the fact that many large integrated mills have been unable to make the necessary additions or repairs to steel making equipment. Meanwhile, an extremely heavy demand for semi-finished products is expected during the remainder of this month, owing to non-integrated mills anticipating fourth quarter price increases.

Bolts, Nuts and Rivets

Specifications have picked up during the past week. Railroad car builders are taking fair tonnages of rivets and are expected to be in the market shortly with heavier bolt orders. Material for car repair shops is moving at recent levels, but in view of possible car shortages this fall producers look for better business from this source. New business from structural fabricators has shown a slight improvement. As yet automobile makers have not been placing heavy tonnages.

Bars

New business has shown an increase during the past week. This improvement is attributable to customers anticipating price increases and also to delayed deliveries. There have been no signs of purely speculative buying. While part of the tonnages being booked are for automotive interests, there continues to be wide diversification. Not only have numerous new customers appeared, but old consumers are increasing the amounts taken. There is a growing disposition on the part of customers to pay more attention to their future requirements, and many of the bookings being placed at this time are in anticipation of fall needs. Meanwhile, continued improvement in the amount of bookings is expected during the rest of this month.

Cold-Finished Bars

A sharp upward surge in bookings for cold-finished material has occurred in the past week. Most of this improvement is in anticipation of higher prices during the fourth quarter. All of the tonnage, however, is for actual consumption and it now appears that makers of cold-finished material, so far as production is concerned, will be extremely busy during the remainder of this year. While motor car interests are responsible

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous;
Advances Over Past Week in Heavy Type, Declines in Italics

Rails and Semi-finished Steel

Per Gross Ton:	Sept. 22, 1936	Sept. 15, 1936	Aug. 25, 1936	Sept. 24, 1935
Rails, heavy, at mill.....	\$36.37 1/2	\$36.37 1/2	\$36.37 1/2	\$36.37 1/2
Light rails, Pittsburgh.....	35.00	35.00	35.00	35.00
Rerolling billets, Pittsburgh..	30.00	30.00	30.00	27.00
Sheet bars, Pittsburgh.....	30.00	30.00	30.00	28.00
Slabs, Pittsburgh.....	30.00	30.00	30.00	27.00
Forging billets, Pittsburgh...	37.00	37.00	37.00	35.00
Wire rods, Nos. 4 and 5, P'gh	38.00	38.00	38.00	38.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb...	1.80	1.80	1.80	1.70

Finished Steel

Per Lb.:	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.95	1.95	1.95	1.80
Bars, Chicago.....	2.00	2.00	2.00	1.85
Bars, Cleveland.....	2.00	2.00	2.00	1.85
Bars, New York.....	2.30	2.30	2.30	2.15
Plates, Pittsburgh.....	1.90	1.90	1.90	1.80
Plates, Chicago.....	1.95	1.95	1.95	1.85
Plates, New York.....	2.19	2.19	2.19	2.09
Structural shapes, Pittsburgh	1.90	1.90	1.90	1.80
Structural shapes, Chicago...	1.95	1.95	1.95	1.85
Structural shapes, New York	2.16 1/4	2.16 1/4	2.16 1/4	2.06 1/4
Cold-finished bars, Pittsburgh	2.25	2.25	2.25	1.95
Hot-rolled strips, Pittsburgh.	1.95	1.95	1.95	1.85
Cold-rolled strips, Pittsburgh	2.60	2.60	2.60	2.60
Hot-rolled annealed sheets, No. 24, Pittsburgh.....	2.50	2.50	2.50	2.40
Hot-rolled annealed sheets, No. 24, Gary.....	2.60	2.60	2.60	2.50
Sheets, galv., No. 24, P'gh..	3.20	3.20	3.20	3.10
Sheets, galv., No. 24, Gary..	3.30	3.30	3.30	3.20
Hot-rolled sheets No. 10, Pittsburgh.....	1.95	1.95	1.95	1.85
Hot-rolled sheets No. 10, Gary.....	2.05	2.05	2.05	1.95
Cold-rolled sheets No. 20, Pittsburgh.....	3.05	3.05	3.05	2.95
Cold-rolled sheets No. 20, Gary.....	3.15	3.15	3.15	3.05
Wire nails, Pittsburgh.....	1.90	1.90	2.10	2.40
Wire nails, Chicago dist. mill	1.95	1.95	2.15	2.45
Plain wire, Pittsburgh.....	2.40	2.40	2.40	2.30
Plain wire, Chicago dist. mill	2.45	2.45	2.45	2.35
Barbed wire, galv., Pittsburgh	2.40	2.40	2.60	2.80
Barbed wire, galv., Chicago dist. mill.....	2.45	2.45	2.65	2.85
Tin plate, 100-lb. box, P'gh..	\$5.25	\$5.25	\$5.25	\$5.25

On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Pig Iron

Per Gross Ton:	Sept. 22, 1936	Sept. 15, 1936	Aug. 25, 1936	Sept. 24, 1935
No. 2 fdy., Philadelphia....	\$21.3132	\$21.3132	\$21.3132	\$20.3132
No. 2, Valley furnace.....	19.50	19.50	19.50	18.50
No. 2, Southern Cin'tl.....	20.2007	20.2007	20.2007	19.2007
No. 2, Birmingham†.....	15.88	15.88	15.88	14.50
No. 2, foundry, Chicago*....	19.50	19.50	19.50	18.50
Basic, del'd eastern Pa.....	20.8132	20.8132	20.8132	19.8132
Basic, Valley furnace.....	19.00	19.00	19.00	18.00
Malleable, Chicago*.....	19.50	19.50	19.50	18.50
Malleable, Valley.....	19.50	19.50	19.50	18.50
L. S. charcoal, Chicago.....	25.2528	25.2528	25.2528	24.2528
Ferromanganese, seab'd car- lots.....	75.00	75.00	75.00	85.00

†This quotation is subject to a deduction of 38c. a ton for phosphorus content of 0.70 per cent or higher.

*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Scrap

Per Gross Ton:				
Heavy melting steel, P'gh....	\$18.25	\$17.75	\$16.25	\$13.25
Heavy melting steel, Phila...	15.75	15.50	14.75	12.50
Heavy melting steel, Ch'go..	16.25	16.25	15.75	12.50
Carwheels, Chicago.....	16.00	16.00	15.00	12.75
Carwheels, Philadelphia....	16.75	16.75	16.25	11.75
No. 1 cast, Pittsburgh.....	16.25	16.25	15.75	14.25
No. 1 cast, Philadelphia....	16.75	16.75	15.75	11.75
No. 1 cast, Ch'go (net ton).	13.50	13.50	13.50	11.25
No. 1 RR. wrot., Phila.....	15.75	15.75	14.75	12.25
No. 1 RR. wrot., Ch'go (net)	14.25	14.25	13.75	9.50

Coke, Connellsville

Per Net Ton at Oven:				
Furnace coke, prompt.....	\$3.65	\$3.65	\$3.65	\$3.25
Foundry coke, prompt.....	4.00	4.00	4.00	4.00

Metals

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Electrolytic copper, Conn....	9.75	9.75	9.75	8.75
Lake copper, New York.....	9.87 1/2	9.87 1/2	9.87 1/2	9.12 1/2
Tin (Straits), New York.....	45.00	45.00	42.10	48.75
Zinc, East St. Louis.....	4.85	4.85	4.80	4.75
Zinc, New York.....	5.22 1/2	5.22 1/2	5.17 1/2	5.12 1/2
Lead, St. Louis.....	4.45	4.45	4.45	4.35
Lead, New York.....	4.60	4.60	4.60	4.50
Antimony (Asiatic), N. Y....	12.50	12.50	12.50	13.75

The Iron Age Composite Prices

Finished Steel

Sept. 22, 1936	2.159c. a Lb.
One week ago	2.159c.
One month ago	2.159c.
One year ago	2.124c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strips. These products represent 85 per cent of the United States output.

	HIGH	Low
1936.....	2.159c., July 7;	2.084c., Mar. 10
1935.....	2.130c., Oct. 1;	2.124c., Jan. 8
1934.....	2.199c., April 24;	2.008c., Jan. 2
1933.....	2.015c., Oct. 3;	1.867c., April 18
1932.....	1.977c., Oct. 4;	1.926c., Feb. 2
1931.....	2.037c., Jan. 13;	1.945c., Dec. 29
1930.....	2.273c., Jan. 7;	2.018c., Dec. 9
1929.....	2.317c., April 2;	2.273c., Oct. 29
1928.....	2.286c., Dec. 11;	2.217c., July 17
1927.....	2.402c., Jan. 4;	2.212c., Nov. 1

Pig Iron

\$18.73 a Gross Ton
18.73
18.73
17.84

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

	HIGH	Low
1936, Jan. 7;	\$18.84, Jan. 11	\$18.73, Aug. 11
18.84, Nov. 5;	17.83, May 14	
17.90, May 1;	16.90, Jan. 27	
16.90, Dec. 5;	13.56, Jan. 3	
14.81, Jan. 5;	13.56, Dec. 6	
15.90, Jan. 6;	14.79, Dec. 15	
18.21, Jan. 7;	15.90, Dec. 16	
18.71, May 14;	18.21, Dec. 17	
18.59, Nov. 27;	17.04, July 24	
19.71, Jan. 4;	17.54, Nov. 1	

Steel Scrap

\$16.75 a Gross Ton
16.50
15.58
12.75

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	HIGH	Low
\$16.75, Sept. 22;	\$12.67, June 9	
13.42, Dec. 10;	10.33, April 23	
13.00, Mar. 13;	9.50, Sept. 25	
12.25, Aug. 8;	6.75, Jan. 3	
8.50, Jan. 12;	6.43, July 5	
11.33, Jan. 6;	8.50, Dec. 29	
15.00, Feb. 18;	11.25, Dec. 9	
17.58, Jan. 29;	14.08, Dec. 3	
16.50, Dec. 31;	13.08, July 2	
15.25, Jan. 11;	13.08, Nov. 22	

for some of the specifications, the great bulk is emanating from miscellaneous sources. Electrical appliances manufacturers are specifying freely. Jobbers have come in for fair-sized tonnages as have implement makers. There has also been some railroad buying. No letup in the rate of incoming orders is expected until the end of this month. At the rate present business is being received, hot bar mills will be heavily taxed by cold-finished makers' requirements before the end of the month.

Shapes and Plates

Specifications for heavy plates and shapes are coming in at a rate slightly below that of a few weeks ago. There continues to be a host of small jobs which add up to a large amount. The American Bridge Co. has booked two highway bridges, one at Hankins, N. Y., involving 460 tons, and another at Aberdeen, S. D., which will take 500 tons of fabricated material.

Steel Sheet Piling

Bethlehem Steel Co. has been awarded the contract for 1700 tons of steel sheet piling to be used at dam No. 22, Saverton, Mo. The Minneapolis Dredge Co. is low bidder for the wharf and dock improvement job at Kansas City, involving 470 tons of piling. Bent Brothers and the Griffith Co., both of Los Angeles, are the low bidders on the Conchas dam project at Newkirk, N. M., involving 874 tons of steel sheet piling. Bids will be taken today on a large tonnage of piling for lock No. 26 on the Mississippi River at Alton, Ill. The New York City department of docks will take bids on Sept. 24 for 816 tons of steel sheet piling to be used as a bulkhead at Sheepshead Bay. The United States Navy Bureau of Supplies and Accounts will take bids on Nov. 2 on 1440 tons of piling to be used as a bulkhead at Sewalls Point, Va.

Strip Steel

Specifications continue to show further improvement. While automobile parts makers are accounting for some of the increase, miscellaneous users are specifying more freely. Orders from furniture and refrigerator manufacturers are holding up. Reflecting aggregate business recovery, cash register manufacturers are in the market for more steel. Prices on high carbon cold-rolled spring steel have been advanced for fourth quarter with the following changes: on carbon 0.51 to 0.75, 3.70c. per lb., Pittsburgh or Cleveland, and 3.90c., Worcester, Mass., an advance of

25c. per 100 lb.; on 0.76 to 1.00 carbon, 5.45c., Pittsburgh or Cleveland, and 5.65c., Worcester, an advance of 50c.; over 1.00 carbon, 7.50c., Pittsburgh or Cleveland, and 7.70c., Worcester, an advance of \$1.

Tin Plate

Operations remain at 90 per cent. Releases are good and mills are now shipping more than they are producing. Much of the tonnage moving out is for last minute cleanup on tomato and fruit packs. General line can business continues to hold up well, but packers' specifications have eased off further.

Tubular Products

Movement of oil country goods is on a par with a week ago. There still continues to be brisk activity in merchant boiler tubes. Bookings of mechanical tubing are holding up well. Interest in line pipe activity has subsided, with only one outstanding job in the picture.

Wire Products

Manufacturing wire tonnages are being ordered more freely than a week ago, part of the improvement being attributable to better orders from automobile manufacturers. Makers of wood screws have increased their orders recently, owing to better building activity. Primarily because of anticipated price increases, consumers of merchant wire items have come into the market over the past week for heavier tonnages. Over the past few months jobbers' stocks have been negligible. It now appears that business in the agricultural regions has not been affected by the drought to the extent that was first anticipated. Fourth quarter price announcements are expected momentarily.

Sheets

Specifications for sheets have shown a sharp increase over the past week. The bulk of improvement has occurred on those items which will be increased for fourth quarter delivery. Orders are well diversified and automobile makers are increasing their tonnages. The large producer in this district has notified its district offices that no more orders may be taken at third quarter quotations on those items which were advanced for fourth quarter delivery. Deliveries on sheets are running four to eight weeks, depending on the grade.

Coal and Coke

A six-months contract for beehive furnace coke involving 72,000 tons has been negotiated in the past week. The price is reported

to be \$3.80 a ton. This order is the requirements of the Sharon Steel Corp.'s Lowellville, Ohio blast furnace, which will be blown in shortly. The coke will be produced by the Lincoln Coal & Coke Co., Waltersburg, Pa., and the Mt. Hope plant of the Brownsville Coal & Coke Co. The Shenango Furnace Co., which heretofore has used by-product coke, will purchase beehive furnace coke for its fourth quarter requirements, totaling approximately 15,000 tons a month. Steel plants in this district with unused by-product capacity are rapidly making repairs and replacements, and it is expected that within the near future many additional ovens will be put into operation. Meanwhile, brisk activity in beehive furnace coke over the past two months has brought in a host of ovens not used during the past five years. It is understood that nearly 200 beehive coke ovens at Youngstown, Pa., owned by H. C. Frick Coal & Coke Co., but leased to another operator, are undergoing repairs and will be ready for operation within the next two months.

Barium Steel to Buy New Equipment

THE Barium Stainless Steel Corp., Canton, Ohio, manufacturer of chromium and non-corrosive steel in specially designed open-hearth furnaces, has filed with the Securities and Exchange Commission a registration statement covering 432,400 shares of \$1 par value common stock, of which 200,000 shares are to be offered at \$3.75 and the remaining 232,400 shares are to be offered at the market, the proceeds to be used for working capital and to carry out the remainder of an equipment installation plan.

It is the purpose of the corporation to use \$300,000,000 for the purpose of equipment. Of this sum \$50,000 will be expended for the installation of a 24-in. mill and necessary soaking pits; \$23,000 for cranes and sundry equipment and \$60,000 for working capital, part of which may be used for the purchase of additional equipment.

The Mortimer E. Cooley bridge, Lansing, Mich., has been chosen by the American Institute of Steel Construction as the most beautiful steel bridge of its size built last year. Fabricated by the Wisconsin Bridge & Iron Co., the structure was designed by M. D. Van Wagner, commissioner of Michigan highways; L. W. Millard, State bridge engineer, and J. H. Cissell, principal design engineer.



CHICAGO

... Ingot output lifted to 73½ after several weeks at 72%.

... New steel units being rushed to take care of demand.

... Shortage of semi-finished steel apparent as tonnages are allotted.

CHICAGO, Sept. 22.—After remaining stationary for weeks, ingot output has edged upward one half point to 73½ per cent of capacity. Pressure is beginning to be exerted by the automotive industry, which is counted on to be practically in full swing by the end of the month and to hold to a high level of steel consumption for five or six weeks. Farm implement manufacturers have regained much of the ground given when the full seriousness of the drought was appreciated, and tractor plants are making use of more steel.

Most steel units in this district are operating at capacity and new construction is being rushed to completion. Inland Steel Co. is operating two new 250-ton open hearth furnaces and will have two additional units in by the middle of October. The Steel Corporation is starting to fire rebuilt open hearths and rolling mill improvements are rapidly taking shape for use. Shipping departments at steel mills are being extended as another means of removing bottle necks which unexpectedly developed as a result of the character of the 1936 markets.

Producers have reached the stage of allotting semi-finished steel and the threat is serious that not only independent users but also units of integrated mills may soon feel a real pinch in supplies of raw steel.

Fourth quarter buying of finished steel in finally under way to a good start and inquiries are brisk.

Pig Iron

Books are growing very fast and are easily the heaviest of the year

and compare with October, 1935, when price advances drove in business. The present market is not speculative. Some users, having made one purchase, now anticipate larger requirements and have entered the market a second time. Inquiries are very active and all signs point to bookings that will exceed anything in recent years.

Coke

Shipments of foundry coke are nip and tuck with production. Expansion of use, which is in sight, will bring the market to the point of scarcity. Milwaukee ovens are said to be sold up and no foundry coke is being produced at Detroit. To the southeast of Chicago, production is curtailed because of the gas problem where natural gas has entered as competition. This is now a seller's market.

Warehouse Business

Orders continue to creep above the August average and there is no reason to believe that the daily average will not increase further. Users in general and small shops in particular reflect activity by insistent demands upon warehouses. Country trade remains good, there being no marked ill effects of the drought. Warehouses are alert to the mill delivery situation and are maintaining well rounded stocks. Prices are stable.

Reinforcing Bars

Two private jobs totaling 500 tons constitute the only awards of 100 tons or more each. The market is quiet, but architects are busy and shops look for revival of lettings and inquiries in 30 days or less.

Many of the plans are for private undertakings. Bids have finally been taken on a 400-ton apartment job for Chicago, thus opening a long dormant field which provided large tonnages prior to the depression. Precast concrete shops are busy and are taking frequent shipments of reinforcing bars. Sinclair Oil Co. is making carlot orders for many of its plants.

Wire Products

Sales continue on the basis of third quarter price levels on which business is being taken for deliveries terminating October 15. Fourth quarter price announcements may come by Friday or Saturday of this week. Mill operations remain at 65 per cent of capacity, where they rest, not so much as a matter of consumer demand, as upon the scarcity of semi-finished steel which may readily become the limiting factor without regard to any other market condition. Estimates are now current that the big rush by automobile plants will be under way in 10 days or less. In the meantime the pressure is starting as one plant and then another swings into heavy assemblies. The start of the fall jobbing movement is slow and all indications point to a hit and miss market demand during the next few weeks. Building throughout the country continues to help the nail market, but the dwindling proportionate use of lumber, which is slowly giving way to other building materials, is easily discernible on mill order books.

Plates

Demand is steady from a wide variety of sources, any one of which seldom places more than 100 tons at a time. Plate shops report numerous small orders which hold their operations not far from capacity. The railroad field holds good promise, it being roughly estimated that Western railroads alone have plans well advanced for 5000 cars, and other building schedules are not a great distance in the future. The Kansas City Southern is now taking figures on its cars and the St. Louis Southwestern will buy five locomotives. The Union Railroad has purchased 100 gondolas and the United Fruit Co. has contracted for five locomotives.

Rails

This market remains in a formative state with the expiration of present rail prices about five weeks away. The Santa Fe is still withholding announcement of distribution of about 90,000 tons. The Chicago & North Western's plans

are in the very early stages of development. Specifications against contracts for track supplies are liberal and new orders for current needs are flowing at a faster rate. The light rail market is dull. Rail mills are maintaining the 40 per cent of capacity rate which was held throughout most of the summer.

Sheets

The rate at which automobile manufacturers release sheets is accelerating, and mills now look for the peak demand from this source to come early in October and to last for at least four to five weeks. All sheet capacity in this territory is fully engaged and deliveries are steadily being extended. The miscellaneous trade is keeping steady pressure against mills for current requirements.

Structural Material

The bulk of new inquiries and fresh awards fall into the classification of 100 tons or less each. In fact, the flow of this kind of business is such that there is no lessening of shop backlogs, which indicate capacity output for several months to come. The only handicap now being experienced by fabricators is that of mill deliveries, which cannot be further improved. However, both shops and ultimate users of structural material have learned to anticipate requirements, and on this score less hardship is being worked on shop schedules. The outstanding local inquiry is for 1500 tons for completion of the Museum of Science and Industry, Chicago.

Bars

Shipments of forging bars are on the upgrade and other signs are at hand which point to the automobile rush being under a heavy head of steam by the end of the month. Farm implement manufacturers are regaining the ground they gave when the drought threatened a large part of their market. This gain is principally in departments where the smaller types of equipment are made. Tractor plants are also picking up and here again the gains are noted at plants making tractors for several specific purposes and not for all classes of work. Miscellaneous machine shops, which dipped slightly late in August, are reflecting greater activity.

The Bureau of Supplies and Accounts, Navy Department, will receive bids Oct. 2 for approximately 1500 tons of steel sheet piling and 115 tons of shapes for the Norfolk, Va., Navy yard.



... BOSTON ...

... Good demand for pig iron continues.

o o o

... Shortage of molders in New England.

BOSTON, Sept. 22—Demand for pig iron continues good. The past week's sales approximated 5000 tons, as against 6000 tons the previous week. Most foundries report improved business, and some a big increase. Scarcity of good molders is holding back the increase in melt. By-product foundry coke shipments are running 15 per cent or more than a year ago. Foundry fourth quarter outlook is encouraging.

New England Shippers Advisory Board predicts fourth quarter iron and steel shipments will require 25 per cent more freight cars than in the like 1935 quarter; machinery 25 per cent; wire goods 5 to 10 per cent; electrical machinery and appliances 15 per cent; and hardware and small tools no more. Considering the tremendous increase in truck haulings the past two years, the predicted increase in freight car requirements is significant.



... CINCINNATI ...

... Heavy contracting for steel sheets.

o o o

... Ingot output remains at recent level.

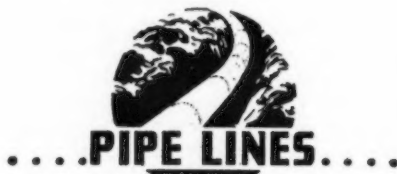
CINCINNATI, Sept. 21—Anticipatory contracting for finished sheets is becoming substantial as consumers indicate fear of mill ability to make prompt delivery on current ordering. New business the past week spurted to almost 150 per cent of capacity output as automobile manufacturers ordered heavily for new model production. Backlogs are steadily mounting and on some grades mills are unable to promise delivery before the latter part of November. Recent price

advances have been well accepted and pressure on quotations is lacking.

Ingot output remains at the level of the preceding week, 29 out of 34 open hearths being in operation.

Pig iron ordering is at steady pace of about 1500 tons a week as consumers decline to be pushed into future commitments. Despite the attitude of melters, the trade anticipates the possibility of furnace capacities being taxed to make deliveries in fourth quarter if the demand continues to mount at present rates. Foundries are stepping up operations so that the market average is about five days a week. Stove and automotive melters are most active, although machine tool casting suppliers are in active production. Price schedules are unchanged.

Shipments of foundry coke tend upward under the stimulus of increased foundry operations. Prices for next month have not been announced.



United States Engineer Office, Memphis, Tenn., asks bids until Sept. 28 for 40 sections of 20-in. steel pontoon pipe, each 50 ft. long, and for 80 steel dredge pontoons, each 22 ft. 11½ in. long (Circular 86-F).

Baltimore plans 12-ft. diameter water tunnel from Loch Raven to Montebello, about seven and a half miles, for trunk line water supply, using steel and concrete pipe sections. Leon Small is city water engineer.

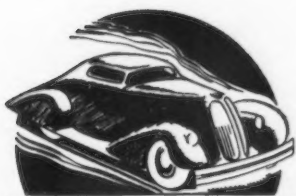
Treadwell Construction Co., Midland, Pa., has submitted low bid to United States Engineer Office, Louisville, for 4700 ft. of welded steel discharge and shore pipe, at \$21.26.

Texarkana, Tex., has let contract to B. & M. Construction Co., Petroleum Building, Oklahoma City, for 12-in. welded steel pipe line from gas field at Odessa, Tex., to city limits, about nine miles, with steel pipe system in municipality for natural gas distribution, main distributing station and booster stations, at \$754,823. Bond issue of \$1,200,000 was authorized recently for entire project. Shirley Peters, Southwest Life Building, Dallas, Tex., is consulting engineer.

Alexander City, Ala., will take bids soon for steel pipe for gas system in connection with new butane gas plant, for which bids will be asked at same time. Cost about \$70,000. R. L. Kenan & Associates, Bell Building, Montgomery, Ala., are consulting engineers.

Stanolind Pipe Line Co., Philcade Building, Tulsa, Okla., affiliated with Stanolind Oil & Gas Co., same address, has let contract to Osage Construction Co., Hutchinson, Kan., for 6-in. welded steel pipe line from connection with present line to point near Hutchinson, about 30 miles, for crude oil transmission.

Salem, Ore., closes bids Oct. 13 for 86,400 ft. of 27, 30 and 36-in. pipe for main water line from city limits of Stayton, Ore., and distributing reservoir at Salem, with alternate bids on steel, concrete and reinforced-wood pipe for different parts of route. Stevens and Koon, Spalding Building, Portland, are consulting engineers.



... CLEVELAND ...

... Fairly heavy buying sustains ingot output at recent rate.

o o o

... Automobile manufacturers place sheet orders for October shipment.

o o o

... Advance on pig iron for first quarter now freely predicted.

CLEVELAND, Sept. 22.—Ingot output in the Cleveland-Lorain district is unchanged this week at 74 per cent of capacity. In the Valley district there is a slight increase, but not enough to change the 76 per cent rate of operations in effect last week.

The volume of business in finished steel continues fairly heavy. If there is any lagging behind in orders from any consuming industry, this is offset by a stepping up in the demand from automobile manufacturers and parts makers and the stimulating effect of the recent price advances. Additional orders for sheets, mostly in cold rolled material, have come from the automobile manufacturers for October shipment. Some of the new miscellaneous business in products that have been advanced is evidently of a speculative character. While bar tonnage has increased, mills are still in fair shape on deliveries and are accepting orders from their regular contract customers for shipment at the mill's convenience until Nov. 1. This extension of the delivery date evidently will relieve pressure for deliveries that was expected had a much earlier deadline date been set. However, some bar business has already been placed at the \$2 a ton fourth quarter price, coming usually from non-contract customers for sizes that cannot be rolled this month. Some hot-rolled annealed sheets also have been sold at the higher fourth quarter price, mills having shut off on taking additional orders at the present price.

Influx in orders for semi-finished steel have been heavy since the

fourth quarter price advance and leading producers have closed their books against additional tonnage.

The only price change is a reduction in pickling and oiling extras on wide hot-rolled strip to correspond with similar extras on sheets.

Prices on wire products for the fourth quarter have not yet been named. It is believed that the prices in effect before the recent reductions will be restored. These lower prices have not increased sales.

The tendency among foundries to use more pig iron and less scrap is increasing and should scrap prices remain at present levels an advance on pig iron for the first quarter is freely predicted.

Pig Iron

The high price and scarcity of scrap and a possible advance in prices are stimulating the demand for pig iron. Contracts for the fourth quarter continue in good volume. Some large buyers were in the market during the week and purchased lots up to 2000 tons. Buying is well diversified, business coming from makers of heating equipment, automotive foundries, agricultural implement plants, miscellaneous consumers and jobbing foundries. Aggregate sales this month have been somewhat ahead of the corresponding period of June, when third quarter buying was under way. One leading producer shipped 25 per cent more iron during the first three weeks of September than during the corresponding period of August. This is due to a considerable extent to releases that are now coming from

the automotive foundries. Use of pig iron in place of scrap is increasing, this being particularly noticeable in the malleable iron industry.

While foundries have carried low inventories of pig iron, many put in fairly large stocks of scrap when prices were low and tending upward. As these stocks are being used more pig iron is being melted. Unless there is a break in scrap prices, producers seem confident that pig iron prices will be advanced for the first quarter. With No. 1 heavy melting steel selling at \$18.50 in Youngstown, the spread between that grade of scrap and basic pig iron has been narrowed to 50c. a ton from a usual spread of about \$2 a ton.

Sheets

Orders in good volume, largely for cold-rolled sheets for October shipment, came from the motor car manufacturers the past week and there was a good miscellaneous demand. Several mills have closed their books for the quarter for hot-rolled annealed sheets in the lighter gages on which the \$2 a ton price advance will become effective Oct. 1, but some can still take additional business in heavy black sheets. Some sales of light hot-rolled annealed sheets have been made at the new price to consumers who have been unable to find a mill that could take on more tonnage for September shipment. Most mills have withdrawn from the market for electrical sheets, the price advance for the coming quarter having brought out all the tonnage they can get out this month.

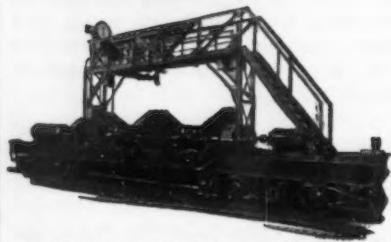
Strip Steel

Pickling and oiling extras on wide hot-rolled strip have been reduced to equalize these processing differentials with similar extras on sheets, the reduction on which in like amount was announced two weeks ago. A leading producer made these reductions effective Sept. 21 and others have announced similar revisions. No change is made in these extras on strip in widths up to 12 in. inclusive. Hot strip 12 to 23 15/16 in. wide now carries a pickling and oiling extra of 15c. for 12 gage and heavier, a 10c. reduction; and 20c. extra for 13 to 16 gage, a 15c. reduction. New business is coming out in good volume and mills are not catching up on shipments. Delivery promises are about three weeks on hot strip and range from five to 10 weeks on cold-rolled material.

Bars, Plates and Shapes

An increased demand for steel bars has resulted from the resump-

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20 Ton Capacity Double Compartment Scale Car for use with Orr type Bin Gates controlled from Operator's Station on Scale Car.

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Electric Cars

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Special Cars and Electrically
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tion of activity by forge shops and other makers of automobile parts and also from the price advance for the fourth quarter. Activity in the construction field is light, the only sizable job pending being the building for the Libbey Glass Co., Toledo, requiring 750 tons. The only awards reported are for a building for a publishing house in Springfield and a highway bridge, both taking 280 tons. A State bridge at Geneva requiring 400 tons is being readvertised.

Iron Ore

Consumption of Lake Superior ore in August increased to 3,968,845 tons, a gain of 142,795 tons over July. This compares with 2,615,927 tons consumed in August last year. Ore consumption for the eight months up to Sept. 1 was 27,407,391 tons, a gain of 43 per cent over the corresponding period last year. Furnace stocks Sept. 1 were 24,007,622 tons, and ore at furnaces and docks amounted to 28,157,694 tons or 3,348,020 tons less than on the same date a year ago. Central district furnaces in August consumed 2,168,777 tons, an increase of 131,959 tons. Lake front furnaces used 1,776,282 tons, an increase of 6774 tons and all-rail furnaces melted 23,786 tons, a gain of 4062 tons over the previous month. There were 126 furnaces in blast using Lake ore Aug. 31, an increase of three for the month. Ore receipts at Lake Erie ports during August were 5,120,459 tons, and for the season 17,527,029 tons as compared with 12,005,778 tons during the same period last year. Shipments from these ports during August were 3,826,916 tons, and for the season until Sept. 1 were 19,988,096 as compared with 9,062,977 tons during the same period last year. Ore on docks Sept. 1 was 4,150,072 tons or 404,851 tons less than on the same date a year ago.



RAILROAD BUYING

Union Railroad Co. has ordered 100 70-ton gondola cars from Ralston Steel Car Co.

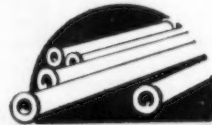
New York Central has ordered two coaches for use on Mercury train from company shops.

The Wabash has been authorized to build 400 55-ton twin hopper coal cars to cost \$2,252 each. Work will be done by a subsidiary to be organized under name of Wabash Car & Equipment Co.

J. G. Brill Co. has received orders for seating and lighting equipment from Pittsburgh Railways Co. to be installed in 50 modern street cars.

American Car & Foundry Motors Co. has received orders for 11 motor coaches from the following companies: Wagner Service, Inc., New Britain, Conn.; A. B. & W. Transit Co., Alexandria, Va.; Connecticut Co., New Haven, and Carolina Coach Co., Raleigh, N. C.

J. G. Brill Co. is building 30-passenger trackless trolleys for Mill Power Supply Co., a Southern Public Utilities Co., property at Greenville, S. C.



..CAST IRON PIPE..

Danbury Waterworks Improvement Commission, F. Ward DeKlynn, chairman, Danbury, Conn., asks bids until Sept. 30 for pipe lines and pumping stations for water system. Chester M. Everett, 22 East Fortieth Street, New York, is consulting engineer.

Dayton, Ohio, plans pipe line extensions and replacements in water system; also pumping machinery and auxiliary equipment, three steel standpipes and other waterworks installation. Cost about \$400,000. Bond issue in such sum will be placed before voters for ratification at forthcoming general election, Nov. 3. W. W. Morehouse, City Building, is director of water department.

Fremont, Ind., closes bids Sept. 28 for 23,330 ft. of 2, 4 and 6-in. for water system; also for fittings, valves, etc. Entire project will cost \$54,500. Charles H. Hurd, Architects' and Builders' Building, Indianapolis, is consulting engineer.

Bicknell, Ind., closes bids Sept. 28 for pipe for water system; also for one motor-driven and one gas-driven horizontal centrifugal pumping units, each 300-gal. per min. capacity; three deep-well turbine pumps, each 200-gal. per min., and other waterworks equipment. Cost about \$44,300. John W. Moore & Son, Indiana Pythian Building, Indianapolis, are consulting engineers.

Cedar Rapids, Iowa, plans extensions in pipe lines for water system. Fund of \$64,336 has been secured through Federal aid for this and other waterworks installation. F. E. Young is city engineer.

Belle, Mo., plans pipe lines for water system; also other waterworks installation. Fund of \$33,545 has been secured through Federal aid for this and sewage system. George E. Wells, Inc., Security Building, St. Louis, is consulting engineer.

Summerfield, Kan., plans installation of pipe lines, tank and tower and other waterworks equipment for water system. Cost about \$45,000. Paulette & Wilson, Farmers' Union Building, Salina, Kan., are consulting engineers.

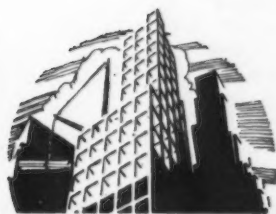
Franklinton, La., plans pipe lines for water system and other waterworks installation. Cost about \$31,100. Financing is being arranged through Federal aid.

Stillwater, Okla., is arranging fund of \$210,000 through Federal aid for pipe lines and other waterworks installation.

Chelsea, Okla., plans pipe lines for water system, 50,000-gal. steel standpipe, pumping station and filtration plant. Cost about \$122,000. Bonds for \$32,000 have been authorized, remainder of fund to be secured through Federal aid.

Los Angeles Department of Water and Power has divided 4000 tons equally between United States Pipe & Foundry Co. and American Cast Iron Pipe Co.

Blaine, Wash., will open bids Oct. 5 on 112 tons of 8 and 12-in. pipe.



...NEW YORK...

... Heavy buying of steel products for fourth quarter.

o o o

... Some sheet mills well booked to the end of year.

o o o

... Railroad orders a factor in increased tonnage.

NEW YORK, Sept. 22.—The volume of steel buying has taken a fresh spurt and local sales offices are recording aggregate tonnages for September thus far that exceed the totals booked in the corresponding period of August, which was one of the best months of the year. There has been active buying of those products on which price advances of \$2 a ton go into effect on Oct. 1—hot-rolled annealed sheets in the gages based on No. 24, hot-rolled carbon bars and semi-finished steel. However, the improved demand has not been confined to these products, but has extended to others on which there are no price changes. A factor that is quite as potent in driving in tonnage is the delayed delivery situation, which is causing railroads, manufacturers and jobbers to anticipate their needs farther ahead.

Heavy railroad buying, particularly by the New York Central, has been one factor in adding to local sales totals the past week. Bars and sheets have been in exceptional demand among all classes of users. Some mills are quoting not less than three or four weeks delivery on bars, and would like to take longer, while the sheet delivery situation is even more serious from the buyer's standpoint. A good many mills are booked through November on most grades, and some are virtually sold up for the entire fourth quarter. Even the most favored customers are frequently quoted late November shipment on some grades of sheets. Integrated sheet mills are so seri-

ously concerned over their ability to satisfy their customers during the remainder of the year that they are not anxious to sell sheet bars, and, in fact, have resorted to a form of allocation of tonnage—generally on a scale downward from the amounts that such customers have been receiving recently. All indications point to the continuance of good operating rates through most of the fourth quarter. If a car shortage, coal and coke shortage or other such factors should curb production or shipments by steel mills some grades of steel will probably be in short supply during the next two months at least.

Pig Iron

The present trend in demand is fair, and, although aggregate sales underwent a slight recession last week, sellers consider the business better than for three to four years. Recently individual orders ranging from 1500 to 3000 tons have been placed. Shipments are brisk, and few if any of the foundries appear to have overbought. Brooklyn foundries on the whole are melting more iron today than for the past two or three years. While sellers have completed a fortnight of good fourth quarter business, inquiry is not yet exhausted. A wholesome feature is the stronger trend in prices of foreign irons. Recently Russian iron was advanced \$2 a ton, and Royal Dutch has been raised by \$1 a ton. This development, combined with active industrial conditions abroad, is removing some of the pressure which

foreign irons have exerted upon the domestic production, and an eventual mark-up in domestic quotations, if decided upon, would be more easily accomplished.

Reinforcing Steel

The market was brighter this week with awards of 4400 tons of bars for jobs which have been pending for some time. Concrete Steel Co. received 3000 tons of bars for the Brooklyn housing project, and Fireproof Products Co. was awarded 1100 tons for work on the West Side elevated highway. Section 8 of the Sixth Avenue subway, involving 340 tons went to Bethlehem Steel Co. A fair amount of tonnage is expected to come in during the next few weeks, but no single outstanding tonnage was reported. One large distributor is said to be selling truckload and less-than-truckload lots at \$2.20 base, which is about \$6 a ton under the market.



...SAN FRANCISCO...

... Reinforcing steel shows more activity.

o o o

... Flood control work may cost \$83,000,000.

SAN FRANCISCO, Sept. 21.—The reinforcing steel market showed new life last week in spite of the continued slump in other types of steel. Several new school projects in Los Angeles and the opening of bids on 1163 tons of bars for the All-American Canal helped considerably in throwing the reinforcing steel market back into the early 1936 swing. In San Francisco, Cahil Brothers were given the general contract for the construction of a furniture exchange involving 1700 tons of bars, and bids were opened on 750 tons to be used in the building of the substructure for Pier 19.

At the same time, in Los Angeles, authorities were contemplating further flood control measures, estimated to cost \$83,000,000. Dams, levees, embankments, and wire riprap will be thrown up on the Los Angeles and San Gabriel Rivers and the Prado and other dams will be constructed on the Santa Ana River. A \$7,880,828 railroad with feeder lines costing approximately \$3,500,000 is contemplated.

plated and up for approval in Grants Pass, Ore. Bids on the 6000 ton Everett, Wash., pipeline, involving 103,920 ft. of 48-in. and 20,710 ft. of 52-in. pipe will be opened October 21.

Republic Steel Corp. was awarded the contract for 3575 tons of reinforcing bars required in the construction of Fort Peck Dam at Fort Peck, Mont. The Department of Water and Power in Los Angeles divided the contract for 4000 tons of cast iron pipe between U. S. Pipe & Foundry Co. and American Cast Iron Pipe Co.

Labor difficulties continue to harass steel fabricators and jobbers, though it is reported that officials in labor organizations are making a strong attempt to keep trouble at a minimum until after election. It appears almost certain at this time that no agreement will be reached between shipowners and longshoremen before the present agreement, drawn up two years ago, runs out on Sept. 30. Continuous petty outbreaks, though having no direct effect, have kept the steel markets slow.



... General upward price revision in prospect.

o o o

... Business holding at a steady level.



... Central of Georgia buys 5000 tons of rails.

o o o

... Steel business active in all lines.

BIRMINGHAM, Sept. 22—Central of Georgia Railway has bought 5000 tons of 90-lb. rail, 250,000 tie plates, 1600 kegs of bolts and 3000 kegs of spikes from the Tennessee Coal, Iron and Railroad Co., according to an announcement made last week. Other orders have also been placed with other Birmingham plants for about 220 tons of additional steel products.

This week the Bessemer, Ala., plant of Pullman-Standard Car Mfg. Co. is beginning production of 200 steel hopper cars ordered by the Central of Georgia several months ago, and previously reported.

The Central of Georgia rail order

is the second to be announced in the past three weeks. Seaboard Air Line bought 10,000 tons.

Birmingham Southern Railroad Co., a subsidiary of the Tennessee company, has bought five 900 hp. diesel electric locomotives from the American Locomotive Co.

Algernon Blair, Montgomery, Ala., was low bidder for the superstructures of Smithfield Courts, Birmingham's \$2,500,000 negro low-cost housing project. His bid was \$1,515,782.

Ingalls Iron Works is to furnish 325 tons of structural steel for the Walgreen Drug Co. building in Miami, while two oil barges for the Standard Oil Co. of Louisiana will require 195 tons.

Virginia Bridge Co. has booked 175 tons for a bridge at Palm Beach, Fla.

Steel buying continues active in all lines and new orders are coming in steadily.

While not as active as the steel market, the pig iron market is looking upward and further improvement is expected in the last quarter.

Furnace operations are unchanged, with 14 open hearths and 10 blast furnaces active.

TORONTO, Ont., Sept. 22—The Canadian iron and steel industry is considering a general upward revision in prices, and it is understood that new lists will be ready within two or three weeks. Advances will include pig iron and a group of finished and semi-finished materials, it is stated. Further details are lacking at this time.

Business in the iron and steel industry is holding at a steady level. No large contracts have been closed and steel interests still are waiting for awards from the railroads. At the present time buying chiefly is being done on a hand-to-mouth basis, with the mining and automotive industries furnishing the greater part of new demand.

Merchant pig iron sales are showing small but steady improvement, with awards for the week between 700 and 800 tons. A few of the larger melters have issued inquiries for iron for last quarter delivery and booking is expected within the next few days. Current sales, however, are for spot delivery. The melt is holding above 50 per cent. Prices are firm.

Trading in iron and steel scrap is improving, but demand is specialized. Prices are unchanged.



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BUFFALO





....BUFFALO....

... **Bethlehem has all blast furnaces on.**

... **Pig iron demand active.**

BUFFALO, Sept. 22.—The buying movement in pig iron has continued, though producers expect this will show an easing-off in a week or so when most foundries will have covered their requirements for the fourth quarter. Shipments then are expected to accelerate. Makers of pig iron describe the market as active and healthy, with several lots booked during the past week, some of which are of 1000 tons or more.

On Sept. 29 bids will be taken by the Buffalo Sewer Authority for steel piling and sheeting for bulkheads and settling tanks. It is estimated that 750 tons of this material is involved.

Bids will be taken soon for 200 tons of reinforcing bars for the new Best Street stadium, Buffalo.

Steel mill operation remains at a high gait, with Bethlehem's Lackawanna plant running 23 open hearths; Republic, five, and Wickwire-Spencer, two.

Bethlehem has just placed "J" furnace in blast, making five stacks or 100 per cent blast furnace operation.



....ST. LOUIS....

... **Wabash to build 425 hopper cars.**

... **Pig iron shipments are heavy**

ST. LOUIS, Sept. 22. — The Wabash Railway, through a wholly owned subsidiary to be organized as the Wabash Car & Equipment Co., has been authorized by the Federal Court here to build 425 55-ton twin hopper cars to cost \$2,252 each, and to be financed through the Chase National Bank of New York.

Business in finished iron and steel has shown a falling off in the last few weeks. This is due in part

to the fact that previously orders have been heavy, and immediate needs have been supplied. It is expected, however, that before Oct. 1, when the advances become effective, there will be greatly increased buying.

Boaz-Kiel Construction Co. is low bidder on an addition to the State insane hospital at Farmington, requiring 100 tons of reinforcing bars.

Shipments of pig iron to makers continued on a heavy scale, with the prospect that September will be an unusually good month. Most of the stove plants have gone back to a six-day week, five days being the rule from June 15 to Sept. 15, according to an agreement with molders. While the agricultural implement business has shown a

marked falling off in recent weeks, preparations are being made for a heavy production program beginning in about 30 to 45 days.

To Dismantle Duluth Furnace

AERICAN Steel & Wire Co. will dismantle its No. 2 blast furnace at its Morgan Park (Duluth), Minn. plant, formerly operated by the Minnesota Steel Co. This furnace has been idle for several years. The company plans to place the No. 1 furnace at its Morgan Park plant in operation within the next two or three months.

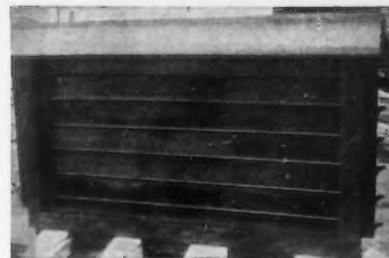


How many feet of Durimet tie-rod in this tank?

This Hauser-Stander pickling tank is approximately 6' wide, 30' long, 4' high.

The tank is completely equipped with low-carbon (0.07%) Durimet $\frac{3}{4}$ " tie-rods, hex nuts, OG washers. For the tie-rods, four hundred and forty-nine ft., eight inches, was required, and one hundred and ninety each of nuts and washers.

The tank is to be used for a hot pickling solution containing ferric salts. That's why



low-carbon Durimet is used—the usual alloy steels and non-ferrous alloys fail under such conditions.

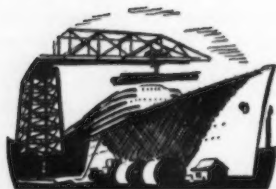
If you have an acid condition that's hard to handle, try Durimet on it. All types of standard equipment are available—pumps, valves, heating jets, ejectors, tank outlets—as well as special forms.

May we be of assistance to you?

THE DURIRON COMPANY, Inc.

438 N. Findlay St.

Dayton, Ohio



... PHILADELPHIA ...

... Operations advance five points to 56 per cent of of capacity.

o o o

... Fourth quarter books are open, but selling at third-quarter prices continues.

o o o

... New demand for plates has tapered off.

PHILADELPHIA, Sept. 22.—The largest district producer has stepped up operations somewhat and a fifth furnace has been added by the Pencoyd producer. These changes have been sufficient to advance the district steel-making activity to 56 per cent of capacity for the current period, as compared with 51 per cent last week and 55 per cent a fortnight ago. Mill backlogs have declined very little, and all producers are looking forward to sustained production near present levels through October and well into November.

Consumers are not finding it difficult to enter orders for all products at third-quarter price levels, and this condition will probably remain in force over the remainder of the month. All sellers here have announced fourth quarter prices on all grades of finished steel, with the exception of wire products. So far little demand has matured for last quarter as coverage is still obtainable at current price levels.

There is an increasing demand for rerolling and forging billets as buyers attempt to protect them-

selves to some extent against the \$2 price advance which goes into effect next month. Several sellers of semi-finished steel are reluctant to take additional orders.

Pig Iron

Fresh business is coming in at a better rate than was the case a fortnight ago. This improved activity probably reflects to a certain extent a disposition on the part of foundries to buy less scrap and round out melts with more pig iron. Inasmuch as foundry scrap continues to advance in price, sellers of iron anticipate additional business arising from this shift in charging ratio. Average jobbing foundry melt has improved slightly, stove producers are considerably more active, and plant foundries continue to operate near capacity.

Shapes and Bars

Although the week's awards were not impressive, the volume of inquiries, particularly those from industrial plants, have latterly shown definite signs of improvement. Bethlehem Steel Co. will furnish 300 tons of shapes for highway construction in York and Cumberland counties and 125 tons for a Pennsylvania Railroad bridge in Lancaster County, Pa. Bids were taken Monday on 1400 tons for an armory at Teaneck, N. J., and a colliery at Shamokin, Pa., requiring 400 tons, is out for estimating. Tenders are due on Sept. 24 for grade crossings at Iselin and Ave-



Veteran Workers Greet Their President

CLEVELAND, OHIO—Four veteran steel workers, whose combined records total 190 years of industrial experience, greet W. A. Irvin, president of the United States Steel Corp., during his visit to the corporation's exhibit at the Great Lakes Exposition. Left to right are Frank Utke, with a 44-year service record; Charles N. Burns, 48 years; Anton Walczak, 46 years; Christie Leese, 52 years and Mr. Irvin. The four old timers are employees of the American Steel & Wire Co.

o o o

nel, N. J., and 1400 tons will be required for a similar project in Hudson County, N. J. A PWA grant of \$9,000,000 has been asked for an extension of the Market Street subway from 30th to 46th Streets, which, if undertaken, will require a large tonnage of structural and reinforcing steel.

Sheets and Plates

Most sellers will probably close third quarter books on sheets this week, although one company is taking orders up to the end of the month. The Frankfort Arsenal has not yet placed orders for the 120 tons of long terne sheets on which bids were taken Sept. 17. Plate orders have fallen off slightly the past two weeks and deliveries can now be made in a week to 10 days. The two local autobody stamping plants are at peak production on new models. Sizable quantities of sheets are being purchased.

Imports

The following iron and steel imports were received here last week: 9750 tons of manganese ore from British West Africa; 4101 tons of chrome ore from British South Africa; 504 tons of spiegeleisen and 608 tons of pig iron from Soviet Russia; 19 tons of steel tubes from Sweden, and 4 tons of ferromanganese from Japan.



..GREAT BRITAIN..

.. Fear of shortage of semi-finished steel.

o o o

.. Tin plate being sold for mid-1937.

[LONDON, England, Sept. 21 (By Cable).—There is an active demand for pig iron, but makers, being heavily booked, are accepting only a small volume of new business. Limited tonnages of hematite have been released for export and 1300 tons was shipped to Australia last week. The fact that contracts are being booked for delivery up to the end of March indicates that there will be no price changes before then.

Heavy pressure for deliveries of semi-finished steel suggests the fear that the recent reduction of imports will create a shortage. It is believed that autumn demand for finished steel is now at its peak. Until recently the expectation of

higher prices caused heavy anticipatory buying, but makers last week decided that no changes will be made in plates, sections, joists and sheets, all of which are in strong demand. The export improvement in sheets is maintained.

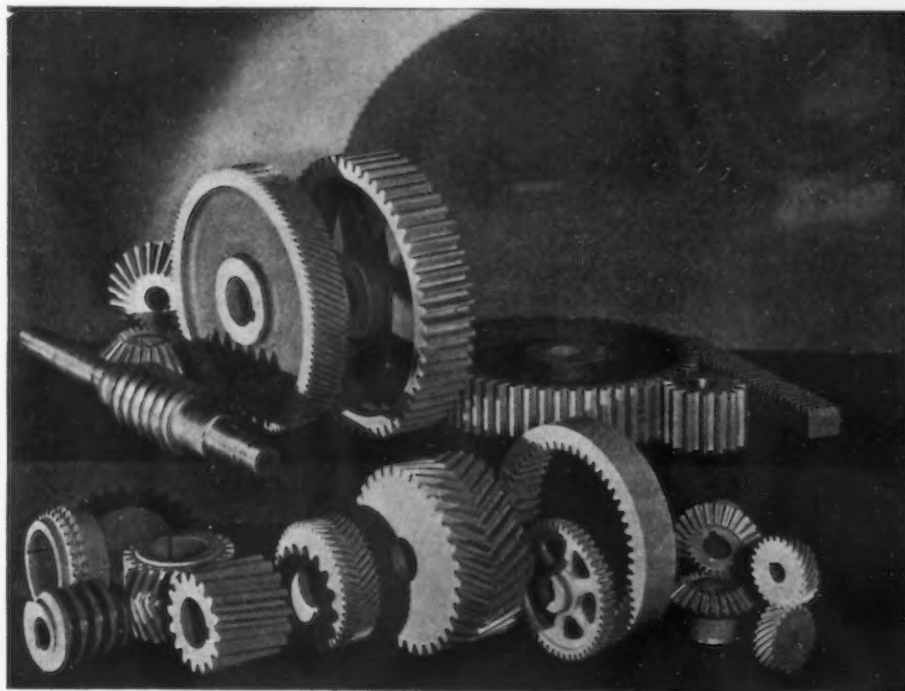
August exports of pig iron were 9800 tons, of which none was shipped to the United States. Total exports of iron and steel in August were 164,000 tons.

Domestic consumers of tinplate

are placing orders for shipment well into the middle of 1937. Export demand is also good and spreading, with Canada, South America, South Africa and Australia buying.

Continental iron and steel markets are quiet following recent heavy purchases, but a cheerful tone remains. British prices are unchanged, as are also Continental gold prices.

A new Australian company with



"HARD-DUR" STEEL GEARS
preserve the tooth form . . .

● When gears are in operation, tooth pressure tends to destroy the involute curve and as this wear progresses the gears no longer run efficiently.

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capital of £1,000,000 is being formed by Lysaghts of Australia and American Rolling Mill Co. of the United States to manufacture Armco plates and sheets in Australia.

G. M. C. Plant to Be Started at Once

ANNOUNCEMENT was made Tuesday in Detroit that the general contract for the construction of the new plant of the Linden Division of General Motors Corp. has been awarded to the J. A. Utley Co., of Detroit. Within a few days the contractor will establish construction offices on the plant site, which is at New Jersey Highway No. 25 at Stiles Street, Linden, N. J.

The plant will be used for assembling Buick, Oldsmobile and Pontiac cars for eastern states and for export shipments. It will be one of the largest automobile assembly plants in the world, with an estimated capacity of 120,000 cars per year. When it is operating at full capacity, more than 2000 persons will be employed.

Construction will begin at once and it is expected that the plant will be completed in January.

The general manager of the newly formed Linden Division of General Motors Corp is W. S. Roberts of Detroit.

Scrap Exports 1,243,087 Tons in Seven Months of This Year

WASHINGTON, Sept. 22.—Whether the sharp advance in scrap prices over the past few months will eventually have a marked effect on scrap exports remains to be seen. Up to the end of July the effect of higher domestic scrap prices was negligible, according to figures of the Department of Commerce. In May exports of scrap totaled 213,366 gross tons. Dropping 25,670 tons, foreign shipments in June were 186,696 tons, but in July, the latest month for which figures are available, there was a slight upswing of 6121 tons to 192,817 tons over June exports.

A notable development in exports during the first seven months of the current year, aggregating 1,243,087 tons, as against 1,322,123 tons in the corresponding period of last year, has been the increased movement to England. In the seven months of 1936 scrap exports to England rose to 331,130 tons as compared with only 148,165 tons in the first seven months of 1935. Consequently, to countries outside of England, the United States has shipped 262,001 tons less in the first seven months of the current year than in the corresponding period of last year. Total scrap exports in 1935 were 2,044,506 tons as compared with 1,835,141 tons in

the year 1934, the monthly averages being 170,000 tons and 154,500 tons, respectively.

Exports in gross tons for the first seven months of 1935 and 1936 follow:

	January to July	
	1935	1936
January	179,630	153,906
February	151,720	142,165
March	228,338	163,292
April	131,732	190,845
May	215,513	213,366
June	209,425	186,696
July	205,765	192,817
Total	1,322,123	1,243,087

U. S. Steel to Sell \$3,000,000 Properties

INDUSTRIAL, commercial and housing sites in the Pittsburgh district, assessed at more than \$3,000,000, will be sold by the United States Steel Corp. through its subsidiaries. Comprising about 700 acres at various locations along the river banks, the properties are owned by the American Bridge Co., American Steel & Wire Co., Carnegie-Illinois Steel Corp. and National Tube Co.

The decision to sell the properties was made after a survey of manufacturing requirements which showed they would not be needed for plant expansion.

Motor Car Output for Eight Months 3,201,166

WASHINGTON, Sept. 22.—Production of motor vehicles in the United States declined to 271,291 units in August from 440,999 in July. Passenger car output dropped to 209,754 from 372,402, while truck production dropped to 61,537 from 68,597.

In the first eight months of the current year, production of motor vehicles in the United States totaled 3,201,166 as compared with 2,787,764 in the corresponding period of last year. Passenger car output was 2,627,303 as against 2,302,901. Truck production was 573,863 as compared with 484,863.

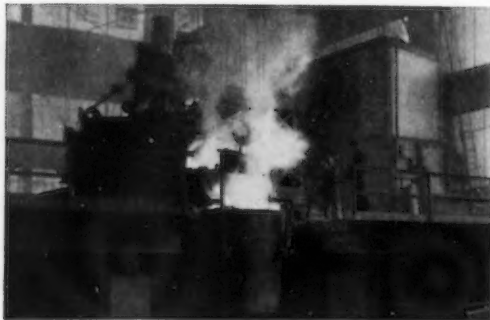
Canadian Motor vehicle production in August declined to 4660 from 10,484 in July.

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BASIC ELECTRIC
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COMPLETE control of all processing from selection of the melting charge to the finished condition is the N. F. & O. *guarantee of quality* in forgings furnished to your specifications—Smooth Forged, Hollow Bored, Rough or Finished Machined.



FABRICATED STEEL

... Lettings light at 9450 tons compared with 20,540 tons last week.

o o o

... New projects rise to 15,300 tons as against 7680 tons a week ago.

o o o

... Plate awards total 1035 tons.

NORTH ATLANTIC STATES

Hartford, Conn., 700 tons, bridge, to American Bridge Co.

Cambridge, Mass., 150 tons, Radcliffe College unit, to New England Structural Steel Co., Everett, Mass.

Mansfield, Mass., 140 tons, State bridge, to United Structural Steel Co.

Allegany County, N. Y., 110 tons, highway bridge, to Lackawanna Steel Construction Corp., Buffalo.

New York, 155 tons, Lenox Hill Hospital addition, to Harris Structural Steel Co., Plainfield, N. J.

New York, 100 tons, bath house, to Bethlehem Steel Co.

Hankins, N. Y., 460 tons, State highway bridge, to American Bridge Co.

Camden, N. J., 190 tons, naval armory, to Belmont Iron Works, Philadelphia.

Stelton, N. J., 125 tons, State highway bridge, to Bethlehem Steel Co.

Washington, Pa., 405 tons, State highway bridge, to Fort Pitt Bridge Works Co.

Lancaster County, Pa., 125 tons, Pennsylvania Railroad bridge, to Bethlehem Steel Co.

York-Cumberland Counties, Pa., 300 tons, highway work, to Bethlehem Steel Co.

Pittsburgh, 320 tons, stockyard building, to Pittsburgh Bridge & Iron Works, Rochester, Pa.

Armstrong County, Pa., 145 tons, highway bridge, to Fort Pitt Bridge Works Co.

Amcelle, Md., 170 tons, Celanese Corp. building, to Lehigh Structural Steel, Allentown, Pa.

THE SOUTH

Harper, W. Va., 247 tons, State highway bridge, to American Bridge Co.

Butler County, Ky., 500 tons, bridge, to Vincennes Bridge Co.

Pickwick Dam, Tenn., 885 tons, dam substructure, to Lakeside Bridge & Steel Co., Milwaukee.

Campbell County, Tenn., 185 tons, highway bridge, to Nashville Bridge Co.

Dallas County, Tex., 170 tons, bridge, to Mosher Steel Co., Houston, Tex.

State of Texas, 560 tons, bridge, to Virginia Bridge Co.

Lawrence County, Miss., 125 tons, bridge, to Austin Brothers, Dallas, Tex.

CENTRAL STATES

Detroit, 190 tons, Chrysler Corp. service building, to R. C. Mahon Co., Detroit.

Guernsey County, Ohio, 102 tons, State bridge, to Bethlehem Steel Co.

Springfield, Ohio, 178 tons, building for McCall Publishing Co., to Pittsburgh Bridge & Iron Co. H. K. Ferguson, Cleveland, contractor.

Chicago, 500 tons, Keeshin terminal, to American Bridge Co.

Harrisburg, Ill., 525 tons, coal tippie, to Pan-American Bridge Co., Newcastle, Ind.

WESTERN STATES

Helper, Utah, 135 tons, underpass, to American Bridge Co.

Fort Peck, Mont., 105 tons, bridge, to Minneapolis-Moline Power Implement Co., Minneapolis.

San Francisco, 110 tons, Merritt Hospital, to Bethlehem Steel Co.

Las Vegas, Nev., 150 tons, State highway bridge, to Judson-Pacific Co.

Los Angeles, 977 tons, Hayfield pumping plant for Metropolitan Water District, to Consolidated Steel Corp.

Los Angeles, 190 tons, Central Avenue bridge floor system for United States Engineers, to Consolidated Steel Corp.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

Rever-Saugus-Malden, Mass., 170 tons, State bridge.

Clinton, Mass., 300 tons, State bridge.

Worcester, Mass., 300 tons, State bridge.

Foxborough, Mass., 120 tons, State bridge.

Sunderland and Deerfield, Mass., 1900 tons, bridge over Connecticut River.

State of New York, 850 tons, highway bridges.

Northport, N. Y., 100 tons, Veterans' hospital.

Weehawken, N. J., 800 tons, plaza construction, Hudson midtown tunnel.

Hudson County, N. J., 1400 tons, grade crossing elimination.

Pennsylvania Railroad, 410 tons, grade crossing elimination at Avenel and Iselin, N. J.; bids taken Sept. 24.

Bedford, County, Pa., 200 tons, highway bridge; Reed & Kuhn, Elysburg, low bidder.

Bedford County, Pa., 157 tons, highway bridge; Westwood Construction Co., Pittsburgh, low bidder.

THE SOUTH

Miami, Fla., 500 tons, building.

CENTRAL STATES

Detroit, 450 tons, two Federal housing projects.

Detroit, 500 tons, building.

Cincinnati, 300 tons, Laurel Homes Government project.

Cincinnati, 175 tons, garage for City Transit Co.

Geneva, Ohio, 400 tons, highway bridge.

Chicago, tonnage being estimated, north side of outer drive.

Chicago, 1500 tons, museum of science and industry.

Chicago, 500 tons, industrial building.

WESTERN STATES

San Francisco, 200 tons, furniture exchange at 10th and Market Streets; Cahill Brothers, general contractors.

FABRICATED PLATES

AWARDS

Sewaren, N. J., 315 tons, tank for Shell Eastern Petroleum Products Co., to Chicago Bridge & Iron Works, Chicago.

Geneva, N. Y., 310 tons, tank for Shell Eastern Petroleum Products Co., to Buffalo Tank Co.

Baltimore, 290 tons, tank for Shell Eastern Petroleum Products Co., to Hammond Iron Works, Warren, Pa.

Chicago, 120 tons, dredge pipe for United States Engineers, to Treadwell Construction Co., Midland, Pa.

NEW PROJECTS

Rockland, Mass., 300 tons, water tank.

Oakland, Cal., 250 tons, East Bay Utilities pipe line; bids soon.

Everett, Wash., 6000 tons, water pipe line; bids Oct. 21.

Long Beach, Cal., 351 tons, seamless steel pipe; award recommended to California Pipe & Supply Co.

SHEET PILING

AWARDS

Milwaukee, 135 tons, Superintendent of Lighthouse, to Carnegie-Illinois Steel Corp.

Saverton, Mo., 1700 tons, dam in Mississippi River, to Bethlehem Steel Corp.

NEW PROJECTS

Buffalo, 750 tons, bulkheads and settling tanks for Buffalo Sewer Authority; bids Sept. 29.

Alton, Ill., 100 tons, completion of dam across Mississippi River.

Sewalls Point, Va., 1500 tons for Navy Department.

Steel Executives Talk to Public by Radio From Great Lakes Exposition

GREATER heights for American standards of living through continued improvement in the art of steel making were forecast by three of the leading executives of the steel industry Thursday night, Sept. 17, in Cleveland, in connection with the celebration of "Iron and Steel Day" at the Great Lakes Exposition.

E. G. Grace, president of Bethlehem Steel Co.; W. A. Irvin, president of United States Steel Corp. and T. M. Girdler, chairman and president of Republic Steel Corp., spoke at the exposition grounds.

"The steel industry has been in the forefront of scientific research, applied to mass production and better products," said Mr. Grace.

"The savings from these and other improvements have been largely passed on to the public in lower prices. The average price of steel today is \$11 a ton lower than it was in 1923. That means a saving of \$300,000,000 this year to the consuming public."

In his talk, Mr. Irvin declared that the "skies are brighter, busi-

ness has improved, weekly earnings are better and some profits have been made within the year." He continued,

"With the industry operating today at about 70 per cent of capacity, 48,000 more men are engaged in steel making than there were in 1929 when the industry was operating on an 85 per cent basis.

"Although uncertainties still exist, it is our hope that this improvement will continue over a substantial period and reach a point where the industry will attain a profitable basis, in the benefit of which both employees and stockholders may participate."

Mr. Girdler pointed out that although the average price of steel was only 2c a lb., an investment of \$50,000,000 was required to build a complete steel plant before a single pound of steel can be produced.

Despite the large investment involved, steel sells for less than other important metals, said Mr. Girdler, comparing its price of 2c a lb. with copper at 10c, tin at 45c, lead at about 4½c and aluminum at 20c.



**... Awards of 9800 tons
—10,450 tons in new
projects.**

AWARDS

Togus, Me., 200 tons, Government home unit, to an unnamed company.

Cambridge, Mass., 400 tons, housing project, to Morrison-Stevens Co.

Mansfield, Mass., 125 tons, grade crossing, to Truscon Steel Co.

Brooklyn, 3000 tons, Ten Eyck housing project, to Concrete Steel Co.

New York, 1100 tons, West Side elevated highway, 98th to 111th Streets, to Fire-proof Products Co.

Chicago, 350 tons, General Mills, Inc., to Concrete Engineering Co.

Chicago, 160 tons, Royal Blue Store, to Calumet Steel Co.

Fort Peck, Mont., 3575 tons, dam construction, to Republic Steel Corp.

Los Angeles, 180 tons, Budlong Avenue school, to Soule Steel Co.

Los Angeles, 200 tons, Los Feliz Boulevard school, to Blue Diamond Steel Co.

Los Angeles, 114 tons, Pinewood Avenue school, to Consolidated Steel Corp.

Los Angeles, 125 tons, Humphreys Avenue school, to Soule Steel Co.

San Francisco, 275 tons, Richmond sewer tunnel, to Truscon Steel Co.

NEW REINFORCING BAR PROJECTS

Saugus-Revere, Mass., 580 tons, State road.

Deerfield, Mass., 280 tons, State bridge.

Lynnfield-Saugus, Mass., 180 tons, State road.

Worcester, Mass., 150 tons, grade crossing.

State of New Jersey, 850 tons, highway work; bids to be taken Oct. 5 at Trenton.

Buffalo, 200 tons, Best Street stadium.

Detroit, 3500 tons, two Federal housing projects.

Alton, Ill., 150 tons, completion of dam across Mississippi River.

Farmington, Mo., 100 tons, State hospital for insane; Boaz-Kiel Construction Co., St. Louis, low bidder on general contract.

San Francisco, 750 tons, substructure on Pier 19; bids opened.

San Francisco, 400 tons, Coffin Redington Co. office and warehouse; Cahill Brothers, general contractors.

San Francisco, 1700 tons, furniture exchange at 10th and Market Streets; Cahill Brothers, general contractors.

Los Angeles, 135 tons, reinforcing trusses for Jackson Street bridge floor system; Consolidated Steel Corp., low bidder.

Los Angeles, 119 tons, bridge over Snow Creek; bids Oct. 8.

Los Angeles, 480 tons, new buildings for Los Angeles junior college; bids Sept. 30.

Los Angeles, 153 tons, auditorium at Jefferson high school; bids Oct. 2.

Los Angeles, 179 tons, San Pedro high school new buildings; bids Sept. 25.

Los Angeles, 400 tons, new buildings at Lincoln Park District junior high school; bids Oct. 7.

Portland, Ore., 124 tons, three bridges near Portland; bids Oct. 1.

Drop Forged Manhole Covers

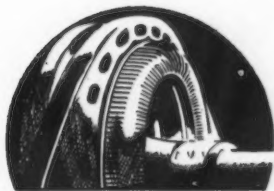
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gages. Four tests were conducted to determine the proportional limit of the covers and the data obtained was used to plot three curves, the total deflection curve, the hydrostatic pressure deflection curve and the permanent set curve.

Curves plotted from the data obtained in the proportional limit tests showed that the four standard test covers had proportional limits of from 650 to 725 lb. As the permissible maximum working pressure is one-half of the proportional limit, the maximum allowable working pressure of the cover having the lowest proportional limit was 315 lb.

A test of one of the covers at 600 lb. pressure for two minutes showed no change in the dimensions, which indicated that at that pressure the metal in the cover was below the permanent set point. Another test was to determine the leakage point. The pressure was moved up to 2350 lb. when a casting on the pump broke, and at this pressure there was no sign of leakage. An examination later showed that the gasket was nearly cut through and an increase of 100 to 200 lb. in the pressure over the above would probably have caused leakage through gasket failure.

Manufacture of stainless steel clad and nickel clad forged covers for the food, chemical, and other industries using tanks that must be acid resisting, is planned by the company, but these are still in the experimental stage.



...NON-FERROUS...

... Refined lead stocks decline 13,000 tons in August.

... Tin dull again after rally.

... Copper and zinc quiet, though firm.

NEW YORK, Sept. 22.—Domestic copper continues quietly quotable at 9.75c. a lb., Connecticut Valley, and at the same time export copper remains quotable at a higher figure. This situation, somewhat unique considering the length of time it has pre-

vailed, apparently is causing domestic producers no unrest. While the home demand is quiet in volume, at least some copper interests are restricting sales to these sources. Still there is no immediate indication that the domestic price will be advanced, and the prevail-

The Week's Prices. Cents Per Pound for Early Delivery

	Sept. 16	Sept. 17	Sept. 18	Sept. 19	Sept. 21	Sept. 22
Electrolytic copper, Conn.*....	9.75	9.75	9.75	9.75	9.75	9.75
Lake copper, N. Y.	9.87 1/2	9.87 1/2	9.87 1/2	9.87 1/2	9.87 1/2	9.87 1/2
Straits tin, Spot, New York....	44.50	45.50	46.00	45.50	45.00	45.00
Zinc, East St. Louis.....	4.85	4.85	4.85	4.85	4.85	4.85
Zinc, New York†.....	5.22 1/2	5.22 1/2	5.22 1/2	5.22 1/2	5.22 1/2	5.22 1/2
Lead, St. Louis.....	4.45	4.45	4.45	4.45	4.45	4.45
Lead, New York.....	4.60	4.60	4.60	4.60	4.60	4.60

*Delivered Connecticut Valley; price 1/4c. lower delivered in New York.

†Includes emergency freight charge.

Aluminum, virgin 99 per cent plus, 19.00c.-21.00c. a lb. delivered.

Aluminum, No. 12 remelt No. 2 standard, in carloads, 16.50c. a lb. delivered.

Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.

Antimony, Asiatic, 12.50c. a lb., New York.

Quicksilver, \$89.00 per flask of 76 lb.

Brass ingots, commercial 85-5-5-5, 9.50c. a lb., delivered; in Middle West 1/4c. a lb. is added on orders for less than 40,000 lb.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig.....	46.00c. to 47.00c.
Tin, bar.....	48.00c. to 49.00c.
Copper, Lake.....	10.75c. to 11.75c.
Copper, electrolytic.....	10.75c. to 11.75c.
Copper, castings.....	10.50c. to 11.50c.
*Copper sheets, hot-rolled.....	17.50c.
*High brass sheets.....	15.62 1/2c.
*Seamless brass tubes.....	17.87 1/2c.
*Seamless copper tubes.....	18.00c.
*Brass rods.....	13.62 1/2c.
Zinc, slabs.....	5.75c. to 6.75c.
Zinc, sheets (No. 9), casks, 1200 lb. and over.....	10.25c.
Lead, American pig.....	5.10c. to 6.10c.
Lead, bar.....	6.10c. to 7.10c.
Lead, Sheets, cut.....	8.25c.
Antimony, Asiatic.....	13.00c. to 14.00c.
Alum., virgin, 99 per cent plus.....	23.30c.
Alum., No. 1 for remelting, 98 to 99 per cent.....	18.50c. to 20.00c.
Solder, 1/2 and 1/2.....	28.50c. to 29.50c.
Babbitt metal, commercial grades.....	25.00c. to 60.00c.

*These prices, which are also for delivery from Chicago and Cleveland warehouses, are quoted with 3 3/4 per cent allowed off for extras, except copper tubes and brass rods, on which allowance is 40 per cent.

From Cleveland Warehouse

Delivered Prices Per Lb.

Tin, Straits pig.....	49.25c.
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Tin, bar.....	51.25c.
Copper, Lake.....	10.75c. to 11.00c.
Copper, electrolytic.....	10.75c. to 11.00c.
Copper, castings.....	10.50c. to 10.75c.
Zinc, slabs.....	6.50c. to 6.75c.
Lead, American pig.....	5.20c. to 6.50c.
Lead, bar.....	8.50c.
Antimony, Asiatic.....	15.50c.
Babbitt metal, medium grade.....	19.00c.
Babbitt metal, high grade.....	52.25c.
Solder, 1/2 and 1/2.....	26.50c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible.....	7.50c.	8.25c.
Copper, hvy. and wire.....	7.37 1/2c.	7.87 1/2c.
Copper, light and bottoms.....	6.37 1/2c.	6.87 1/2c.
Brass, heavy.....	4.25c.	4.87 1/2c.
Brass, light.....	3.50c.	4.25c.
Hvy. machine composition.....	6.25c.	6.75c.
No. 1 yel. brass turnings.....	5.25c.	5.75c.
No. 1 red brass or compos. turnings.....	5.87 1/2c.	6.37 1/2c.
Lead, heavy.....	3.62 1/2c.	4.00c.
Sheet aluminum.....	13.25c.	14.75c.
Zinc.....	2.50c.	2.87 1/2c.
Cast aluminum.....	12.12 1/2c.	13.25c.

ing situation is therefore a bit difficult to explain. General opinion seems to be that certain prominent factors in the industry are opposed to a change in the market's level, at least, for a while ahead. Domestic sales so far in February have been 31,344 tons.

Tin

The past week saw domestic prices for tin react to a semi-stoppage of sales by producers in the East. Offerings were reported as too small to take care of current needs, and, with prices in principal trading centers on the up-grade, buyers naturally took notice. At New York good business was felt on Wednesday and Thursday, but at the higher price of 46.00c. a lb. for spot Straits metal on Friday demand commenced to recede. This week buying dullness is again evident. The price, too, has dropped back, and is quotable today at about 45.00c. a lb. Tomorrow the international committee will hold its meeting, and sellers and consumers are temporarily preoccupied by the contingency. Official London prices are £195 5s. for standard spot and £193 5s. for futures. The Eastern quotation is £196 15s.

Lead

While demand showed some recession last week, aggregate sales nevertheless exceeded the normal weekly volume, and the lead business completed its eleventh consecutive week of exceptional activity. The principal producer continues to limit its sales to special customers, but not even these are allowed all the tonnage they inquire for. News has just come out that refined stocks during August underwent a reduction of 13,000 tons. Although it was explained that this was largely due to the fact that production was abnormally low in August, the curtailment in stocks is important. Despite this and other bullish factors, prices still are unchanged and producers quietly go on quoting their product on the basis of 4.45c. a lb., St. Louis.

Zinc

There has been no recent improvement in demand for zinc by domestic users, but the market continues strong statistically and in general undertone. Somewhat encouraging have been the latest rumors from abroad that cartel negotiations are being pushed. Domestic sales last week were roughly 1800 tons, while shipments totaled about 2000 tons heavier. Order backlogs again receded. The domestic price for zinc remains firm, being quotable at 4.85c. a lb., East St. Louis basis. Ore prices are unchanged also.



IRON AND STEEL SCRAP

... Composite advances to \$16.75 on additional strength at Pittsburgh and eastern Pennsylvania.

o o o

... Scrap and pig iron prices closer together than ever before in the past decade.

o o o

... Supplies coming out more freely in certain areas.

RISES in the price for heavy melting steel based on sizable sales in Pittsburgh and eastern Pennsylvania have sent the composite price upward to \$16.75 a gross ton, as compared with \$16.50 last week. At \$16.75 the scrap composite is only \$1.98 below the composite for pig iron, which is the closest these two basic commodities have been since the turn of the century. Other close points were early in 1929, when the difference was \$2.13, and early in 1916, when the difference was \$2.21.

Supplies are coming out more freely in eastern Pennsylvania and in the Detroit area. Although other districts continue to display a strong undertone, most market observers look for little additional price strength before winter weather sets in.

Pittsburgh

A substantial tonnage of No. 1 steel was sold during the week at \$18.50. Consequently, this market is quotable 50c. higher at \$18 to \$18.50. The market continues strong, with a possibility of higher prices before the top is reached. Some brokers are predicting a \$20 market. Other dealers, however, hold the view that scrap will not be sold that high before the trend turns downward. There continues to be a heavy short interest. A large independent steel company has been reported to have sold a substantial tonnage of scrap equivalent to No. 1 at a price near \$18.50. This particular company is self sufficient as far as its own scrap requirements are concerned.

Chicago

Prices remain strong and heavy shipments pour into this territory from a circle bounded by Oklahoma, Texas, Kansas, Nebraska and the Dakotas. Acceptances by mills are slightly in excess of immediate needs, and heavy melting steel is being piled. However, mills are operating at a high rate which will be continued for several

months and storage of scrap serves as a safeguard against interruptions of shipments in the early part of the winter. One mill is cutting acceptance for the reason that it needs all of its unloading facilities to handle a boatload of scrap from Canada.

Cleveland

A Youngstown district mill purchased several grades of scrap during the week, paying \$18.50 for No. 1 steel, \$17.50 for No. 2 and \$18 for No. 1 hydraulic bundles. While these prices do not indicate an advance from the previous week, they apparently establish for the time being the prices brokers have been asking. Cleveland scrap is being shipped to outside mills, mostly to the Youngstown district, as local consumers remain out of the market. While local quotations on most steel making grades are unchanged, it seems doubtful whether Cleveland mills could buy scrap except at a considerable advance over the quoted price of \$15.50 to \$16 for No. 1, which price brokers are paying for shipment to Youngstown. For Lorain delivery, \$17 is being paid. Short shoveling turnings are bringing \$11.50 for Youngstown delivery. Foundry grades are firmer.

Philadelphia

Several mills have purchased sizable lots of No. 1 at \$16 and brokers have raised their bids to \$15.50. A moderate advance has been made in No. 2, and new and old hydraulic bundles are 50c. higher. Bids were taken Wednesday on the Lehigh Valley list of about 2000 tons, and the Edward G. Budd Mfg. Co. will offer its October list of about 3000 tons of bundles and 500 tons of miscellaneous scrap on Sept. 29. Higher brokers' prices are bringing out scrap more freely than was the case a week ago.

Detroit

There is no change in prices. This market has definitely leveled off and supplies are coming out in volume from both plants and yards. Consequently brokers are finding it easy to make sizable consumer shipments

whereas a week ago there was fighting for 100-ton lots. Strong markets in Chicago and Pittsburgh will probably tend to boost prices here to keep scrap in this area for recently enlarged local demand.

St. Louis

Dealers of scrap iron in St. Louis continue to pay higher prices to cover a heavy short interest, which has prevailed since recent large sales. Mills have bought nothing of consequence for several weeks, but it is expected they will come into the market sometime this week. The only railroad list pending is that of the Missouri-Kansas-Texas, 1000 tons.

Cincinnati

Dealers' bids mount upward as better demand appears in the offing. While no heavy commitments have been made, the total tonnage on miscellaneous orders indicates the revival of mill interest in scrap coverage. Material, while still apparently available, is gradually becoming more difficult to obtain, thus pressing dealers into bidding steadily upward to cover.

Buffalo

With dealers reporting scrap difficult to pick up, mills are at the present time showing little interest. However, the second largest district consumer is expected in the market soon for a sizable tonnage of No. 2 steel and companion grades. The largest consumer is known to have purchased quantities of canal scrap and Detroit scrap at comparatively low prices and this supply is taking care of its heavy open-hearth operation.

Boston

Prices are strong and generally higher. Movement of material to the Pittsburgh area is increasing; movement to eastern Pennsylvania is spasmodic; shipments to Worcester, Mass., are about holding their own, and deliveries to Europe and Japan are decreasing. Cleaned engine blocks are going southward and to Detroit via barge at around \$10, f.o.b., and uncleaned blocks are being delivered to Harrisburg, Pa., by rail at around \$7.50. Stove plate for Pittsburgh is \$7.50 to \$7.75 on cars, No. 1 heavy melting steel \$11.40 to \$11.90 and occasionally better than \$12 from interior New England points. A steamer has just finished loading here on a contract placed last June. Another boat for a European port is due June 24.

New York

Dealers and brokers are paying the same prices for scrap that were in effect a week ago. The market continues firm at these levels. Current prices are drawing out needed tonnage much more freely, and a balance between supply and demand may soon be apparent. Movement of material to eastern Pennsylvania consuming points by rail, and by barge to Buffalo and beyond is active. A few boats are loading for foreign ports, but the tonnage is small compared with previous shipments as domestic activity is making dealers neglectful of this business.

Iron and Steel Scrap Prices

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel.	\$18.00 to \$18.50
No. 2 hvy. mltng. steel.	16.75 to 17.25
No. 2 RR. wrought	18.00 to 18.50
Scrap rails	18.50 to 19.00
Rails, 3 ft. and under.	19.50 to 20.00
Comp. sheet steel	18.00 to 18.50
Hand bundled sheets.	17.00 to 17.50
Hvy. steel axle turn.	16.50 to 17.00
Machine shop turn.	12.50 to 13.00
Short shov. turn.	12.50 to 13.00
Mixed bor. & turn.	11.25 to 11.75
Cast iron borings	12.50 to 13.00
Cast iron carwheels	17.00 to 17.50
Hvy. breakable cast.	14.50 to 15.00
No. 1 cast	16.00 to 16.50
RR. knuckles & cplrs.	20.50 to 21.00
Rail coil & leaf springs	20.50 to 21.00
Roller steel wheels.	20.50 to 21.00
Low phos. billet crops.	21.00 to 21.50
Low phos. sh. bar.	20.50 to 21.00
Low phos. punchings.	20.00 to 20.50
Low phos. plate scrap.	20.00 to 20.50
Steel car axles	19.50 to 20.00

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel.	\$15.50 to \$16.00
No. 2 hvy. mltng. steel.	14.50 to 15.00
Comp. sheet steel	15.00 to 15.50
Light bund. stampings	11.50 to 12.00
Drop forge flashings.	14.50 to 15.00
Machine shop turn.	10.00 to 10.50
Short shov. turn.	11.00 to 11.50
No. 1 busheling	14.50 to 15.00
Steel axle turnings.	11.00 to 11.50
Low phos. billet crops	19.00 to 19.50
Cast iron borings	10.50 to 11.00
Mixed bor. & turn.	10.50 to 11.00
No. 2 busheling	10.50 to 11.00
No. 1 cast	16.75 to 17.25
Railroad grate bars.	9.00 to 9.50
Stove plate	9.00 to 9.50
Rails under 3 ft.	19.00 to 19.50
Rails for rolling	16.50 to 17.00
Railroad malleable	17.75 to 18.00
Cast iron carwheels.	15.50

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel.	\$15.50 to \$16.00
No. 2 hvy. mltng. steel.	14.00 to 14.50
Hydraulic bund., new.	15.00 to 15.50
Hydraulic bund., old.	12.50 to 13.00
Steel rails for rolling.	17.00 to 17.50
Cast iron carwheels.	16.50 to 17.00
Hvy. breakable cast.	15.50 to 16.00
No. 1 cast	16.50 to 17.00
Stove plate (steel wks.)	12.50 to 13.00
Railroad malleable	16.50
Machine shop turn.	9.50 to 10.00
No. 1 blast furnace.	7.50 to 8.00
Cast borings	7.50 to 8.00
Heavy axle turnings.	12.50 to 13.00
No. 1 low phos. hvy.	18.50 to 19.00
Couplers & knuckles.	18.50 to 19.00
Roller steel wheels.	18.50 to 19.00
Steel axles	20.50 to 21.00
Shafting	20.50 to 21.00
No. 1 RR. wrought.	15.50 to 16.00
Spec. iron & steel pipe.	12.50 to 13.00
Bundled sheets	12.00 to 12.50
No. 1 forge fire	14.00 to 14.50
Cast borings (chem.)	10.50 to 13.00

CHICAGO

Delivered to Chicago district consumers:

Hvy. mltng. steel.	\$16.00 to \$16.50
Auto. hvy. mltng. steel.	14.00 to 14.50
Shoveling steel	16.00 to 16.50
Hydraul. comp. sheets.	15.00 to 15.50
Drop forge flashings.	13.50 to 14.00
No. 1 busheling	14.75 to 15.25
Roller carwheels	18.00 to 18.50
Railroad tires, cut	18.00 to 18.50
Railroad leaf springs.	17.50 to 18.00
Axle turnings	14.25 to 14.75
Steel coup. & knuckles	18.00 to 18.50
Coil springs	18.50 to 19.00
Axle turn. (elec.)	15.00 to 15.50
Low phos. punchings.	18.00 to 18.50
Low phos. plates, 12 in. and under	18.00 to 18.50
Cast iron borings	9.00 to 9.50
Short shov. turnings.	10.00 to 10.50
Machine shop turn.	8.50 to 9.00
Rerolling rails	16.50 to 17.00
Steel rails under 3 ft.	17.00 to 17.50
Steel rails under 2 ft.	18.00 to 18.50
Angle bars, steel	17.50 to 18.00
Cast iron carwheels.	16.00 to 16.50
Railroad malleable	18.00 to 18.50
Agric. malleable	15.00

Per Net Ton

Iron car axles	\$18.50 to \$19.00
Steel car axles	17.75 to 18.25
No. 1 RR. wrought.	14.25 to 14.75

No. 2 RR. wrought.	\$14.25 to \$14.75
No. 2 busheling, old.	6.00 to 6.50
Locomotive tires	13.00 to 13.50
Pipes and flues	8.50 to 9.00
No. 1 machinery cast.	13.50 to 14.00
Clean auto. cast	12.50 to 13.00
No. 1 railroad cast.	13.00 to 13.50
No. 1 agric. cast.	11.00 to 11.50
Stove plate	8.50 to 9.00
Grate bars	9.50 to 10.00
Brake shoes	10.00 to 10.50

BUFFALO

Per gross ton, f.o.b. consumers' plants:

No. 1 hvy. mltng. steel.	\$14.50 to \$15.50
No. 2 hvy. mltng. steel.	13.50 to 14.50
Scrap rails	14.00 to 14.50
New hy. b'ndled sheets	13.50 to 14.00
Old hydraulic bundles.	12.50 to 13.00
Drop forge flashings.	13.50 to 14.00
No. 1 busheling	13.50 to 14.50
Hvy. axle turnings.	10.50 to 11.00
Machine shop turn.	7.50 to 8.50
Knuckles & couplers.	17.00 to 17.50
Coil & leaf springs.	17.00 to 17.50
Roller steel wheels.	17.00 to 17.50
Low phos. billet crops.	17.50 to 18.00
Short shov. turnings.	9.50 to 10.00
Mixed Bor. & turn.	9.00 to 9.50
Cast iron borings	9.00 to 9.50
No. 2 busheling	11.00 to 11.50
Steel car axles	17.00 to 17.50
Iron axles	12.00 to 12.50
No. 1 machinery cast.	15.00 to 15.50
No. 1 cupola cast	14.50 to 15.00
Stove plate	12.00 to 12.50
Steel rails under 3 ft.	17.00 to 17.50
Cast iron carwheels.	13.00 to 14.00
Railroad malleable	17.00 to 18.00
Chemical borings	10.50 to 11.00

BIRMINGHAM

Per gross ton delivered to consumer:

Hvy. melting steel.	\$11.50
Scrap steel rails	\$12.00 to 12.50
Short shov. turnings.	8.00
Stove plate	8.00
Steel axles	13.50 to 14.00
Iron axles	13.50 to 14.00
No. 1 RR. wrought.	8.50 to 9.00
Rails for rolling	13.50 to 14.00
No. 1 cast	12.50
Tramcar wheels	12.00

ST. LOUIS

Dealers' buying prices per gross ton delivered to consumer:

Selected hvy. steel.	\$14.50 to \$15.00
No. 1 hvy. melting.	14.25 to 14.75
No. 2 hvy. melting.	12.50 to 13.00
No. 1 locomotive tires.	13.50 to 14.00
Misc. stand.-sec. rails.	15.00 to 15.50
Railroad springs	16.00 to 16.50
Bundled sheets	9.50 to 10.00
No. 2 RR. wrought	14.50 to 15.00
No. 1 busheling	8.50 to 9.00
Cast bor. & turn.	5.50 to 6.00
Rails for rolling	15.75 to 16.25
Machine shop turn.	4.00 to 4.50
Heavy turnings	10.50 to 11.00
Steel car axles	16.00 to 16.50
Iron car axles	17.00 to 17.50
No. 1 RR. wrought.	12.50 to 13.00
Steel rails under 3 ft.	16.00 to 16.50
Steel angle bars	15.50 to 16.00
Cast iron carwheels.	12.75 to 13.25
No. 1 machinery cast.	12.50 to 13.00
Railroad malleable	15.00 to 15.50
No. 1 railroad cast.	12.50 to 13.00
Stove plate	7.50 to 8.00
Agricul. malleable	12.50 to 13.00
Grate bars	9.00 to 9.50
Brake shoes	11.25 to 11.75

CINCINNATI

Dealers' buying prices per gross ton:

No. 1 hvy. mltng. steel.	\$13.50 to \$14.00
No. 2 hvy. mltng. steel.	11.00 to 11.50
Scrap rails for mltng.	14.00 to 14.50
Loose sheet clippings.	8.50 to 9.00
Bundled sheets	10.50 to 11.00
Cast iron borings	6.50 to 7.00
Machine shop turn.	7.50 to 8.00
No. 1 busheling	11.00 to 11.50
No. 2 busheling	6.75 to 7.25
Rails for rolling	14.50 to 15.00
No. 1 locomotive tires.	12.50 to 13.00
Short rails	17.00 to 17.50
Cast iron carwheels.	13.50 to 14.00
No. 1 machinery cast.	14.00 to 14.50
No. 1 railroad cast.	13.50 to 14.00
Burnt cast	10.00 to 10.50
Stove plate	10.00 to 10.50
Agricul. malleable	12.50 to 13.00
Railroad malleable	15.00 to 15.50

DETROIT

Dealers' buying prices per gross ton:

No. 1 hvy. mltng. steel.	\$14.00 to \$14.50
No. 2 hvy. mltng. steel.	13.00 to 13.50
Borings and turnings.	9.00 to 9.50

Long turnings	\$9.00 to \$9.50
*Short shov. turnings.	10.50 to 11.00
No. 1 machinery cast.	14.50 to 15.00
Automotive cast	14.50 to 15.00
Hydraul. comp. sheets.	14.50 to 15.00
Stove plate	8.50 to 9.00
New factory bushel.	13.50 to 14.00
Old No. 2 busheling	8.50 to 9.00
Sheet clippings	10.50 to 11.00
Flashings	13.00 to 13.50
Low phos. plate scrap.	14.25 to 14.75

CANADA

Dealers' buying prices per gross ton:

	Toronto	Mon-treal
Hvy. melting steel.	\$7.50	\$7.00
Rails, scrap	8.50	8.00
Machine shop turn.	4.00	4.00
Boiler plate	7.00	6.00
Hvy. axle turnings.	4.50	4.00
Cast borings	5.00	4.50
Steel borings	4.00	4.00
Wrought pipe	4.00	4.00
Steel axles	8.50	9.00
Axles, wrought iron.	9.00	9.50
No. 1 machinery cast.	11.50	11.00
Stove plate	7.50	7.00
Standard carwheels	11.00	10.50
Malleable	7.00	7.00
Shoveling steel	6.50	6.00
Bushelings	6.00	5.50
Compressed sheets	6.50	6.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel.	\$17.50 to \$18.00
Hydraulic bundles	17.00 to 17.50
Machine shop turn.	12.00 to 12.50

NEW YORK

Dealers' buying prices per gross ton:

No. 1 hvy. mltng. steel.	\$11.75 to \$12.25
No. 2 hvy. mltng. steel.	10.75 to 11.25
Hvy. breakable cast.	11.50 to 12.00
No. 1 machinery cast.	12.00 to 12.50
No. 2 cast	10.25 to 10.75
Stove plate	8.50 to 9.00
Steel car axles	16.00 to 17.00
Shafting	15.00 to 16.00
No. 1 RR. wrought	12.00 to 12.50
No. 1 wrought long.	11.00 to 11.50
Spec. iron & steel pipe	10.50 to 11.00
Forge fire	8.00 to 8.50
Rails for rolling	11.00 to 11.50
Short shov. turnings.	5.75 to 6.25
Machine shop turn.	6.25 to 6.50
Cast borings	6.25 to 6.50
No. 1 blast furnace.	5.00 to 5.50
Cast borings (chem.)	10.00 to 11.00
Unprepar. yard scrap.	6.50 to 7.00

Per gross ton, delivered local foundries:

No. 1 machn. cast.	\$14.00 to \$14.50
No. 1 hvy. cast cupola.	11.50 to 12.00
No. 2 cast	10.50 to 11.00

Add 25c. to 50c. to above quotations to secure North Jersey prices.

BOSTON

Dealers' buying prices per gross ton:

No. 1 hvy. mltng. steel.	\$11.40 to \$11.90
Scrap rails	11.90 to 12.15
No. 2 steel	10.40 to 10.90
Breakable cast	10.25 to 10.50
Machine shop turn.	6.50 to 6.65
Bund. skeleton long.	10.25 to 10.50
Shafting	15.25 to 15.75
Cast bor. chemical.	5.00 to 7.00

Per gross ton delivered consumers' yards:

Textile cast	\$12.00 to \$13.50
No. 1 machine cast	12.00 to 13.50
Stove plate	9.00 to 9.50

EXPORT

Brokers' buying prices per gross ton:

New York, delivered alongside barges	
No. 1 hvy. mltng. steel.	\$11.50 to \$12.00
No. 2 hvy. mltng. steel.	10.50 to 11.00
No. 2 cast	10.00
Stove plate	9.00
Rails (scrap)	11.50 to 12.00

Boston, on cars at Army Base or Mystic Wharf

No. 1 hvy. mltng. steel.	\$12.00 to \$12.50
No. 2 hvy. mltng. steel.	11.00 to 11.50
Rails (scrap)	12.50 to 12.75
Stove plate	7.75 to 8.00
Machine shop turn.	6.00 to 6.25

New Orleans, on cars at Stuyvesant Dock

No. 1 hvy. mltng. steel.	\$12.60 to \$12.75
No. 2 hvy. mltng. steel.	11.60 to 11.75

Los Angeles, on cars or trucks at local piers

No. 1 hvy. mltng. steel.	\$10.50 to \$11.00
Compressed bundles	8.50 to 9.00

PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham. Prices at Duluth are \$2 a ton higher, and delivered Detroit \$3 higher.

Per Gross Ton
Rerolling \$30.00
Forging quality 37.00

Sheet Bars

F.o.b. Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton
Open-hearth or Bessemer..... \$30.00

Skelp

F.o.b. Pittsburgh, Chicago, Youngstown, Buffalo, Coatesville, Pa., Sparrows Point, Md.

Per Lb.
Grooved, universal and sheared 1.80c.

Wire Rods

(Nos. 4 and 5)

Per Gross Ton
F.o.b. Pittsburgh or Cleveland.....\$38.00
F.o.b. Chicago, Youngstown or Anderson, Ind. 39.00
F.o.b. Worcester, Mass. 40.00
F.o.b. Birmingham 41.00
F.o.b. San Francisco 47.00
F.o.b. Galveston 44.00

BARS, PLATES, SHAPES

Iron and Steel Bars

Soft Steel

Base per Lb.
F.o.b. Pittsburgh 1.95c.
F.o.b. Chicago or Gary 2.00c.
F.o.b. Duluth 2.10c.
Del'd Detroit 2.10c.
F.o.b. Cleveland 2.00c.
F.o.b. Buffalo 2.05c.
Del'd Philadelphia 2.26c.
Del'd New York 2.30c.
F.o.b. Birmingham 2.10c.
F.o.b. cars dock Gulf ports..... 2.35c.
F.o.b. cars Pacific ports..... 2.50c.

Rail Steel

(For merchant trade)

F.o.b. Pittsburgh 1.80c.
F.o.b. Cleveland, Chicago, Gary or Moline, Ill. 1.85c.
F.o.b. Buffalo 1.90c.
F.o.b. Birmingham 1.95c.
F.o.b. cars dock Gulf ports..... 2.20c.
F.o.b. cars dock Pacific ports.. 2.35c.

Billet Steel Reinforcing

(Straight lengths as quoted by distributors)

F.o.b. Pittsburgh 2.05c.
F.o.b. Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham 2.10c.
Del'd Detroit 2.20c.
F.o.b. cars dock Gulf ports..... 2.45c.
F.o.b. cars dock Pacific ports.. 2.45c.

Rail Steel Reinforcing

(Straight lengths as quoted by distributors)

F.o.b. Pittsburgh 1.90c.
F.o.b. Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham 1.95c.
F.o.b. cars dock Gulf ports... 2.30c.
F.o.b. cars dock Pacific ports. 2.30c.

Iron

F.o.b. Chicago 1.80c.
F.o.b. Pittsburgh (refined) ... 2.10c.
Delivered New York 2.05c.
Delivered Philadelphia 2.10c.

Cold Finished Bars and Shafting*

Base per Lb.

F.o.b. Pittsburgh 2.25c.
F.o.b. Cleveland, Chicago and Gary 2.30c.
F.o.b. Buffalo 2.35c.
Del'd Detroit 2.40c.
Del'd eastern Michigan 2.45c.

*In quantities of 10,000 to 19,999 lb.

Plates

Base per Lb.

F.o.b. Pittsburgh 1.90c.
F.o.b. Chicago or Gary 1.95c.
Del'd Cleveland 2.095c.
F.o.b. Coatesville or Spar. Pt. 2.00c.
Del'd Philadelphia 2.09c.
Del'd New York 2.19c.
F.o.b. Birmingham 2.05c.
F.o.b. cars dock Gulf ports... 2.30c.
F.o.b. cars dock Pacific ports.. 2.45c.
Wrought iron plates, f.o.b. Pittsburgh 3.20c.

Floor Plates

F.o.b. Pittsburgh 3.45c.
F.o.b. Chicago 3.50c.
F.o.b. Coatesville 3.55c.
F.o.b. cars dock Gulf ports... 3.85c.
F.o.b. cars dock Pacific ports.. 4.00c.

Structural Shapes

Base per Lb.

F.o.b. Pittsburgh 1.90c.
F.o.b. Chicago 1.95c.
Del'd Cleveland 2.095c.
F.o.b. Buffalo or Bethlehem... 2.00c.
Del'd Philadelphia 2.115c.
Del'd New York 2.1625c.
F.o.b. Birmingham (standard) 2.05c.
F.o.b. cars dock Gulf ports... 2.30c.
F.o.b. cars dock Pacific ports.. 2.45c.

Steel Sheet Piling

Base per Lb.

F.o.b. Pittsburgh 2.25c.
F.o.b. Chicago or Buffalo 2.35c.
F.o.b. cars dock Gulf or Pacific Coast ports 2.70c.

RAILS AND TRACK SUPPLIES

F.o.b. Mill

Standard rails, heavier than 60 lb per gross ton.....\$36.37½
Angle bars, per 100 lb. 2.55

F.o.b. Code Basing Points

Light rails (from billets) per gross ton\$35.00
Light rails (from rail steel) per gross ton 34.00

Base per 100 Lb.

Spikes 2.75c.
Tie plates, steel 2.00c.
Tie plates, Pacific Coast ports.. 2.10c.
Track bolts, to steam railroads. 3.75c.
Track bolts, to jobbers, all sizes (per 100 counts) 70 per cent off list

Basing points on light rails are Pittsburgh, Chicago and Birmingham; on spikes and tie plates, Pittsburgh, Chicago, Buffalo, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; on tie plates alone, Steelton, Pa.; on spikes alone, Cleveland, Youngstown, Lebanon, Pa., Columbia, Pa., Richmond, Va.

SHEETS, STRIP, TIN PLATE,

TERNE PLATE

Sheets

Hot Rolled

Base per Lb.

No. 10, f.o.b. Pittsburgh 1.95c.
No. 10, f.o.b. Gary 2.05c.
No. 10, del'd Detroit 2.15c.
No. 10, del'd Philadelphia 2.26c.
No. 10, f.o.b. Birmingham 2.10c.
No. 10, f.o.b. cars dock Pacific ports 2.50c.

Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh 2.50c.
No. 24, f.o.b. Gary 2.60c.
No. 24, del'd Detroit 2.70c.
No. 24, del'd Philadelphia 2.81c.
No. 24, f.o.b. Birmingham 2.65c.
No. 24, f.o.b. cars dock Pacific ports 3.15c.
No. 24, wrought iron, Pittsburgh 4.30c.

Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh... 2.60c.
No. 10 gage, f.o.b. Gary 2.70c.
No. 10 gage, f.o.b. Detroit 2.80c.
No. 10 gage, del'd Philadelphia.. 2.91c.
No. 10 gage, f.o.b. Birmingham.. 2.75c.
No. 10 gage, f.o.b. cars dock Pacific ports 3.20c.

Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh.. 3.05c.
No. 20 gage, f.o.b. Gary 3.15c.
No. 20 gage, del'd Detroit 3.25c.
No. 20 gage, del'd Philadelphia.. 3.36c.
No. 20 gage, f.o.b. Birmingham .. 3.20c.
No. 20 f.o.b. cars dock Pacific ports 3.60c.

Galvanized Sheets

No. 24 gage, f.o.b. Pittsburgh.. 3.20c.
No. 24, f.o.b. Gary 3.30c.
No. 24, del'd Philadelphia 3.51c.
No. 24, f.o.b. Birmingham 3.35c.
No. 24, f.o.b. cars dock Pacific ports 3.80c.
No. 24, wrought iron, Pittsburgh 4.95c.

Electrical Sheets

(F.o.b. Pittsburgh)

Base per Lb.

Field grade 2.90c.
Armature 3.25c.
Electrical 3.75c.
Special Motor 4.80c.
Special Dynamo 5.50c.
Transformer 6.00c.
Transformer Special 7.00c.
Transformer Extra Special..... 7.50c.

Silicon Strip in coils—Sheet price plus silicon sheet extra width extras, plus 25c. per 100 lb. for coils.

Long Ternes

No. 24, unassorted 8-lb. coating f.o.b. Pittsburgh 3.50c.
F.o.b. Gary 3.60c.
F.o.b. cars dock Pacific ports.. 4.20c.

Vitreous Enamelling Stock

No. 20, f.o.b. Pittsburgh 3.05c.
No. 20, f.o.b. Gary 3.15c.
No. 20, f.o.b. Birmingham 3.65c.
No. 20, f.o.b. cars dock Pacific ports 3.65c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh 2.75c.
No. 28, Gary 2.85c.
No. 28, cars dock Pacific ports. 3.35c.

Tin Plate

Base per Box

Standard cokes, f.o.b. Pittsburgh district mill\$5.25
Standard cokes, f.o.b. Gary..... 5.35
Standard cokes, f.o.b. cars dock Pacific ports 5.90

Terne Plate

(F.o.b. Pittsburgh)

(Per Package, 20 x 28 in.)

8-lb. coating I.C.\$10.00
15-lb. coating I.C. 12.00
20-lb. coating I.C. 13.00
25-lb. coating I.C. 14.00
30-lb. coating I.C. 15.25
40-lb. coating I.C. 17.50

Hot-Rolled Hoops, Bands, Strips and Flats under ¼ in.

Base per Lb.

All widths up to 24 in., Pgh. 1.95c.
All widths up to 24 in., Chicago. 2.05c.
All widths up to 24 in., del'd Detroit 2.15c.
All widths up to 24 in., Birmingham 2.10c.
Cooperage stock, Pittsburgh... 2.05c.
Cooperage stock, Chicago..... 2.15c.

Cold-Rolled Strips*

Base per Lb.

F.o.b. Pittsburgh 2.60c.
F.o.b. Cleveland 2.60c.
Del'd Chicago 2.895c.
F.o.b. Worcester 2.80c.

* Carbon 0.25 and less.

Cold-Rolled Spring Steel

Pittsburgh

and

Cleveland Worcester

Carbon 0.25-0.50% 2.60c. 2.80c.
Carbon .51-.75 3.45c. 3.65c.
Carbon .76-1.00 4.95c. 5.15c.
Carbon Over 1.00 6.50c. 6.70c.

Fender Stock

No. 14, Pittsburgh or Cleveland. 2.90c.
No. 14, Worcester 3.30c.
No. 20, Pittsburgh or Cleveland. 3.30c.
No. 20, Worcester 3.70c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland.)

To Manufacturing Trade

	Per Lb.
Bright wire	2.40c.
Spring wire	3.05c.

Chicago prices on products sold to the manufacturing trade are \$1 a ton above Pittsburgh or Cleveland. Worcester and Duluth prices are \$2 a ton above, Birmingham \$3 above, and Pacific Coast prices \$9 a ton above Pittsburgh or Cleveland.

To the Trade

	Base per Keg
Standard wire nails	\$1.90
Smooth coated nails	1.90

	Base per 100 Lb.
Annealed fence wire	\$2.65
Galvanized fence wire	3.00
Polished staples	2.60
Galvanized staples	2.85
Barbed wire, galvanized	2.40
Twisted barbed wire	2.40
Woven wire fence, base column	57
Single loop bale ties, base column	51

Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is \$2 above Pittsburgh); Duluth, Minn., mill prices are \$2 a ton over Pittsburgh except for woven wire fence, which is \$3 over Pittsburgh and Birmingham mill prices are \$3 a ton over Pittsburgh.

On wire nails, barbed wire and staples, prices at Houston, Galveston and Corpus Christi, Tex., New Orleans, Lake Charles, La., and Mobile, Ala., are \$6 a ton over Pittsburgh.

On nails, staples and barbed wire, prices of \$6 a ton above Pittsburgh are also quoted at Beaumont and Orange, Tex.

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

F.o.b. Pittsburgh only on wrought iron pipe.

Butt Weld		Wrought Iron	
In.	Black Galv.	In.	Black Galv.
1/8	57 37	1/8	51 138
1/4 to 3/8	60 44 1/2	1/4 to 3/8	54 21 1/2
1/2	64 55	1/2	58 20 1/2
3/4	67 59	3/4	61 25 1/2
1 to 3	69 61 1/2	1 to 3	43 28

Lap Weld		Wrought Iron	
In.	Black Galv.	In.	Black Galv.
2	62 53 1/2	2	37 22 1/2
2 1/2 to 3 1/2	65 56 1/2	2 1/2 to 3 1/2	38 25
3 1/2 to 6 1/2	67 58 1/2	4 to 8	40 28 1/2
7 & 8	66 56 1/2	9 to 12	38 24 1/2
9 & 10	65 56		
11 & 12	64 55		

Butt Weld, extra strong, plain ends		Wrought Iron	
In.	Black Galv.	In.	Black Galv.
1/8	55 42 1/2	1/8	51 138
1/4 to 3/8	57 46 1/2	1/4 to 3/8	54 21 1/2
1/2	62 54 1/2	1/2	58 20 1/2
3/4	66 58 1/2	3/4	61 25 1/2
1 to 3	68 61	1 to 3	43 28

Lap Weld, extra strong, plain ends		Wrought Iron	
In.	Black Galv.	In.	Black Galv.
2	60 52 1/2	2	37 22 1/2
2 1/2 to 3 1/2	63 55 1/2	2 1/2 to 3 1/2	38 25
3 1/2 to 6 1/2	67 58 1/2	4 to 8	40 28 1/2
7 & 8	66 56 1/2	9 to 12	38 24 1/2
9 & 10	65 56		
11 & 12	64 55		

On butt-weld and lap-weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Seamless Steel Commercial Boiler Tubes and Locomotive Tubes

(Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

	Cold Drawn	Hot Rolled
1 in. o.d.	13 B.W.G. \$ 8.60	\$ 7.82
1 1/4 in. o.d.	13 B.W.G. 10.19	9.26
1 1/2 in. o.d.	13 B.W.G. 11.26	10.23
1 3/4 in. o.d.	13 B.W.G. 12.81	11.64
2 in. o.d.	13 B.W.G. 14.35	13.04
2 1/4 in. o.d.	13 B.W.G. 16.00	14.54
2 1/2 in. o.d.	12 B.W.G. 17.61	16.01
2 3/4 in. o.d.	12 B.W.G. 19.29	17.54
3 in. o.d.	12 B.W.G. 20.45	18.59

3 in. o.d.	12 B.W.G.	\$21.45	\$19.50
4 1/2 in. o.d.	10 B.W.G.	41.08	37.35
3 1/2 in. o.d.	11 B.W.G.	27.09	24.62
4 in. o.d.	10 B.W.G.	33.60	30.54
4 1/2 in. o.d.	10 B.W.G.	41.08	37.35
5 in. o.d.	9 B.W.G.	51.56	46.87
6 in. o.d.	7 B.W.G.	79.15	71.90

Extra for less-carload quantities:

25,000 lb. or ft. to 39,999 lb. or ft.	5 %
12,000 lb. or ft. to 24,999 lb. or ft.	12 1/2 %
6,000 lb. or ft. to 11,999 lb. or ft.	25 %
2,000 lb. or ft. to 5,999 lb. or ft.	35 %
Under 2,000 lb. or ft.	50 %

CAST IRON WATER PIPE

Per Net Ton

*6-in. and larger, del'd Chicago.	\$48.40
6-in. and larger, del'd New York	45.20
*6-in. and larger, Birmingham	40.00
6-in. and larger, f.o.b. dock, San Francisco or Los Angeles	48.00
F.o.b. dock, Seattle	40.50
F.o.b. dock, Seattle	51.50
Class "A" and gas pipe, \$3 extra.	
4-in. pipe is \$3 a ton above 6-in.	

* Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$39. Birmingham, and \$47.40, delivered Chicago and 4-in. pipe, \$42. Birmingham, and \$50.40 a ton, delivered Chicago.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List

Machine and carriage bolts:	
1/2 in. x 6 in. and smaller	.70 and 10
Larger than 1/2 in.	.70 and 5
Lag bolts	.70 and 5
Flow bolts, Nos. 1, 2, 3, and 7	
heads	.70 and 5
Hot-pressed nuts, blank or tapped, square	.70 and 5
Hot-pressed nuts, blank or tapped, hexagon	.70 and 5
C.p.c. and t. square or hex. nuts, blank or tapped	.70 and 5
Semi-finished hexagon nuts, U.S.S. and S.A.E., all sizes	60, 20 and 10
Stove bolts in packages, nuts attached	.75
Stove bolts in packages, with nuts separate	.75 and 5
Stove bolts in bulk	.82 1/2
Tire bolts	.50 and 5

On stove bolts freight is allowed to destination on 200 lb. and over.

Large Rivets

(1/2-in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh or Cleveland	\$3.05
F.o.b. Chicago or Birmingham	3.15

Small Rivets

(7/16-in. and smaller)

Per Cent Off List

F.o.b. Pittsburgh	.70 and 5
F.o.b. Cleveland	.70 and 5
F.o.b. Chicago and Birm'g'm	.70 and 5

Cap and Set Screws

(Freight allowed up to but not exceeding 65c. per 100 lbs. on lots of 200 lb. or more)

Per Cent Off List

Milled cap screws, 1 in. dia. and smaller	.80, 10 and 10
Milled standard set screws, case hardened, 1 in. dia. and smaller	75
Milled headless set screws, cut thread 1/4 in. and smaller	.75
Upset hex. head cap screws U.S.S. or S.A.E. thread, 1 in. and smaller	.60
Upset set screws, cut and oval points	.75 and 10
Milled studs	.65 to 65 and 10

Alloy and Stainless Steel

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem. Base price, \$51 a gross ton.

Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton. Open-hearth grade, base..... 2.55c. Delivered price at Detroit is... 2.70c.

S.A.E. Alloy Series Numbers

	Differential per 100 lb.
2000 (1/4% Nickel)	\$0.25
2100 (2 1/4% Nickel)	0.95
2300 (3 1/2% Nickel)	1.50
2500 (5% Nickel)	2.25
3100 Nickel Chromium	0.55
3200 Nickel Chromium	1.35
3300 Nickel Chromium	3.80
3400 Nickel Chromium	3.20

4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum)	0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70
4600 Nickel Molybdenum (0.20 to 0.30) Molybdenum (1.50 to 2.00 Nickel)	1.05
5100 Chromium Steel (0.60 to 0.90 Chromium)	0.35
5100 Chromium Steel (0.80 to 1.10 Chromium)	0.45
5100 Chromium Spring Steel...base	
6100 Chromium Vanadium Bar...1.10c.	
6100 Chromium Vanadium Spring Steel	0.70
Chromium Nickel Vanadium	1.40
Carbon Vanadium	0.85

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. The differential for cold-drawn bars 1/4c. per lb. higher with separate extras. Blooms, billets and slabs under 4x4 in. or equivalent are sold on the bar base. Slabs with a section area of 16 in. and 2 1/4 in. thick or over take the billet base. Sections 4x4 in. to 10x10 in. or equivalent carry a gross ton price, which is the net price for bars for the same analysis. Larger sizes carry extras.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 3.05c. base per lb. Delivered Detroit, 3.20c.

STAINLESS STEEL No. 302

(17 to 19% Cr, 7 to 9% Ni, 0.08 to 0.20% C.)

(Base Prices f.o.b. Pittsburgh)

	Per Lb.
Forging billets	19.55c.
Bars	23c.
Plates	26c.
Structural shapes	23c.
Sheets	33c.
Hot-rolled strip	20 1/2c.
Cold-rolled strip	27c.
Drawn wire	23c.

TOOL STEEL

Base per Lb.

High speed	57 1/2c.
High carbon chrome	37c.
Oil hardening	21c.
Special	19c.
Extra	15 1/2c.
Regular	12 1/2c.

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 3c. a lb. higher.

British and Continental BRITISH

Per Gross Ton

f.o.b. United Kingdom Ports

Based on Exchange rate as of Sept. 21

Ferromanganese, export	\$45.58
Billets, open-hearth	29.74 to \$31.01
Tin plate, per base box	4.74 to 4.84
Steel bars, open-hearth	39.87
Beams, open-hearth	38.61
Channels, open-hearth	39.87
Angles, open-hearth	38.61
Black sheets, No. 24 gage	51.90
Galvanized sheets, No. 24 gage	61.92

CONTINENTAL

Per Metric Ton, f.o.b. Continental Ports

Based on Exchange rate of Sept. 21

Billets, Thomas	\$19.27
Wire rods, No. 5 B.W.G.	36.90
Steel bars, merchant	26.64
Sheet bars	19.68
Plate, 1/4 in. and up	35.42
Plate, 3/16 in. and 5 mm.	34.85
Sheets, 1/4 in.	36.90
Beams, Thomas	25.58
Angles (Basic)	25.58
Hoops and strip base	32.79
Wire, plain, No. 8	44.03
Wire nails	47.15
Wire, barbed, 4 pt. No. 10 B.W.G.	71.74

IRON AND STEEL WAREHOUSE PRICES

PITTSBURGH

	Base per Lb.
Plates	3.25c.
Structural shapes	3.25c.
Soft steel bars and small shapes	3.05c.
Reinforcing steel bars	3.05c.
Cold-finished and screw stock:	
Rounds and hexagons	3.50c.
Squares and flats	3.50c.
Hot rolled strip incl. 3/16 in. thick, under 24 in. wide	3.30c.
Hoops	3.80c.
Hot-rolled annealed sheets (No. 24), 25 or more bundles	3.35c.
Galv. sheets (No. 24), 25 or more bundles	4.05c.
Hot-rolled sheets (No. 10)	3.05c.
Galv. corrug. sheets (No. 28), per square (more than 3750 lb.)	\$3.77
Spikes, large	3.10c.

	Per Cent Off List
Track bolts, all sizes, per 100 count	60
Machine bolts, 100 count	65-5
Carriage bolts, 100 count	65-5
Nuts, all styles, 100 count	65-5
Large rivets, base per 100 lb.	\$3.65
Wire, black, soft ann'l'd, base per 100 lb.	2.90c.
Wire, galv. soft, base per 100 lb.	3.25c.
Common wire nails, per keg	2.35c.
Cement coated nails, per keg	2.35c.

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 9999 lb.
*Delivered in Pittsburgh switching district.

CHICAGO

	Base per Lb.
Plates and structural shapes	3.30c.
Soft steel bars, rounds	3.10c.
Soft steel bars, squares and hexagons	3.25c.
Cold-fin. steel bars:	
Rounds and hexagons	3.65c.
Flats and squares	3.65c.
Hot-rolled strip	3.40c.
Hot-rolled annealed sheets (No. 24)	3.95c.
Galv. sheets (No. 24)	4.65c.
Spikes (keg lots)	3.70c.
Track bolts (keg lots)	4.70c.
Rivets, structural (keg lots)	3.80c.
Rivets, boiler (keg lots)	3.90c.

	Per Cent Off List
Machine bolts	*65
Carriage bolts	*65
Lag screws	*65
Hot-pressed nuts, sq. tap or blank	*65
Hot-pressed nuts, hex. tap or blank	*65
Hex. head cap screws	87½
Cut point set screws	75 and 10
Flat head bright wood screws	70
Spring cotters	55
Stove bolts in full packages	70
Rd. hd. tank rivets, 7/16 in. and smaller	57½
Wrought washers	\$4.50 off list
Black ann'l'd wire per 100 lb.	\$3.95
Com. wire nails, 50 kegs or more	2.40c.†
Cement c'd nails, 50 kegs or more	2.40c.†

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 9999 lb. All prices are f.o.b. consumers' plants within the Chicago switching district.

*These are quotations delivered to city trade for quantities of 100 lb. or more. For lots of less than 100 lb., the quotation is 65 per cent off. Discounts applying to country trade are 70 per cent off, f.o.b. Chicago, with full or partial freight allowed up to 50c. per 100 lb.

†Prices for city and suburbs only.

NEW YORK

	Base per Lb.
Plates, ½ in. and heavier	3.50c.
Structural shapes	3.47c.
Soft steel bars, rounds	3.41c.
Iron bars, Swed. charcoal	6.75c. to 7.00c.
Cold-fin. shafting and screw stock:	
Rounds and hexagons	3.96c.
Flats and squares	3.96c.
Cold-rolled; strip, soft and quarter hard	3.36c.
Hoops	3.66c.

Bands	3.66c.
Hot-rolled sheets (No. 10)	3.15c. to 3.41c.
Hot-rolled ann'l'd sheets (No. 24*)	3.75c. to 3.99c.
Galvanized sheets (No. 24*)	4.10c. to 4.50c.
Long terme sheets (No. 24)	5.25c. to 5.35c.
Armco iron, galv. (No. 24†)	5.65c.
Toncan iron, galv. (No. 24†)	5.65c.
Galvannealed (No. 24†)	5.75c.
Armco iron, hot-rolled annealed (No. 24†)	5.10c.
Toncan iron, hot-rolled annealed (No. 24†)	5.10c.
Armco iron hot-rolled (No. 10†)	4.15c.
Toncan iron, hot-rolled (No. 10†)	4.15c.
Cold-rolled sheets (No. 20) less than 1000 lbs.	
Standard quality	4.65c.
Deep drawing	5.40c.
Stretcher leveled	5.40c.
SAE, 2300, hot-rolled	6.97c.
SAE, 3100, hot-rolled	5.37c.
SAE, 6100, hot-rolled, annealed	9.57c.
SAE, 2300, cold-rolled	8.03c.
SAE, 3100, cold-rolled, annealed	7.43c.
Floor plate ½ in. and heavier	5.30c.
Standard tool steel	11.25c.
Wire, black annealed (No. 9)	3.50c.
Wire, galv. (No. 9)	3.85c.
Tire steel, 1 x ½ in. and larger	3.85c.
Open-hearth spring steel	4.00c. to 10.00c.
Common wire nails, base per keg	\$3.21

	Per Cent Off List
Machine bolts, square head and nut:	
All diameters	65 and 10
Carriage bolts, cut thread:	
All diameters	65 and 10
*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.	
†125 lb. and more.	

ST. LOUIS

	Base per Lb.
Plates and struc. shapes	3.55c.
Bars, soft steel (rounds and flats)	3.35c.
Bars, soft steel (squares, hexagons, ovals, half ovals and half rounds)	3.50c.
Cold-fin. rounds, shafting, screw stock	3.90c.
Hot-rolled annealed sheets (No. 24)	4.20c.
Galv. sheets (No. 24)	4.90c.
Hot-rolled sheets (No. 10)	3.40c.
Black corrug. sheets (No. 24)	4.20c.
*Galv. corrug. sheets	4.90c.
Structural rivets	4.00c.
Boiler rivets	4.10c.

	Per Cent Off List
Tank rivets, 7/16 in. and smaller	55
Machine and carriage bolts, lag screws, fitting up bolts, bolt ends, plow bolts, hot-pressed nuts, square and hexagon, tapped or blank, semi-finished nuts; all quantities	70

*No. 26 and lighter take special prices.

PHILADELPHIA

	Base per Lb.
*Plates, ½ in. and heavier	3.10c.
*Structural shapes	3.10c.
*Soft steel bars, small shapes, iron bars (except bands)	3.15c.
†Reinforc. steel bars, sq. twisted and deformed	2.96c.
Cold-finished steel bars	3.91c.
*Steel hoops	3.55c.
*Steel bands, No. 12 and 3/16 in. incl.	3.30c.
Spring steel	5.00c.
†Hot-rolled anneal. sheets (No. 24)	3.75c.
†Galvanized sheets (No. 24)	4.50c.
*Hot-rolled annealed sheets (No. 10)	3.20c.
Diam. pat. floor plates, ½ in.	5.05c.
Swedish iron bars	6.25c.

These prices are subject to quantity differential except on reinforcing and Swedish iron bars.

*Base prices subject to deduction on orders aggregating 4000 lb. or over.

†For 25 bundles or over.

†For less than 2000 lb.

CLEVELAND

	Base per Lb.
Plates and struc. shapes	3.41c.
Soft steel bars	3.00c.
†Reinforc. steel bars	2.10c.
†Cold-finished steel bars	3.65c.
Flat-rolled steel under ¼ in.	3.46c.
Cold-finished strip	†3.00c.
Hot-rolled annealed sheets (No. 24)	3.91c.
Galvanized sheets (No. 24)	4.61c.
Hot-rolled sheets (No. 10)	3.21c.
Hot-rolled 3/16 in. 24 to 48 in. wide sheets	3.46c.
*Black ann'l'd wire, per 100 lb.	\$2.65
*No. 9 galv. wire, per 100 lb.	3.00
*Com. wire nails, base per keg	2.10

†Outside delivery 10c. less.

*For 5000 lb. or less.

†Plus switching and cartage charges and quantity differentials up to 50c.

CINCINNATI

	Base per Lb.
Plates and struc. shapes	3.52c.
Bars, rounds, flats and angles	3.32c.
Other shapes	3.47c.
Rail steel reinforc. bars	3.25c.
Hoops and bands, 3/16 in. and lighter	3.57c.
Cold-finished bars	3.87c.
Hot-rolled annealed sheets (No. 24) 25 bundles or more	4.62c.
Galv. sheets (No. 24) 500 lb. or less	4.47c.
Galvanized sheets (No. 24) over 3500 lb.	4.07c.
Hot-rolled sheets (No. 10)	3.32c.
Structural rivets	4.50c.
Small rivets	55 per cent off list
No. 9 ann'l'd wire, per 100 lb. (1000 lb. or over)	\$2.88
Com. wire nails, base per keg:	
Any quantity less than carload	3.04
Cement c'd nails, base 100-lb. keg	3.50
Chain, lin. per 100 lb.	8.35

Net per 100 Ft.

Seamless steel boiler tubes,	
2-in.	\$20.37
4-in.	48.14
Lap-welded steel boiler tubes,	
2-in.	19.38
4-in.	45.32

BUFFALO

	Base per Lb.
Plates	3.48c.
Struc. shapes	3.35c.
Soft steel bars	3.15c.
Reinforcing bars	2.60c.
Cold-fin. flats and sq.	3.70c.
Rounds and hex.	3.70c.
Cold-rolled strip steel	3.19c.
Hot-rolled annealed sheets (No. 24)	4.16c.
Heavy hot-rolled sheets (3/16 in., 24 to 48 in. wide)	3.53c.
Galv. sheet (No. 24)	4.80c.
Bands	3.53c.
Hoops	3.53c.
Heavy top-rolled sheets	3.28c.
Com. wire nails, base per keg	\$2.85
Black wire, base per 100 lb. (2500-lb. lots or under)	4.00
(Over 2500 lb.)	3.90

BOSTON

	Base per Lb.
Beams, channels, angles, tees, zeos	3.64c.
H beams and shapes	3.64c.
Plates—Sheared, tank, and univ. mill, ¼ in. thick and heavier	3.66c.
Floor plates, diamond pattern	5.46c.
Bar and bar shapes (mild steel)	3.55c.
Bands 3/16 in. thick and No. 12 ga. incl.	3.75c. to 4.75c.
Half rounds, half ovals, ovals and bevels	4.80c.
Tire steel	4.80c.
Cold-rolled strip steel	3.245c.
Cold-finished rounds, squares and hexagons	4.05c.
Cold-finished flats	4.05c.
Blue annealed sheets, No. 10 ga.	3.75c.
One pass cold-rolled sheets No. 24 ga.	4.30c.
Galvanized steel sheets, No. 24 ga.	4.30c.
Lead coated sheets, No. 24 ga.	5.85c.

Price delivered by truck in metropolitan Boston, subject to quantity differentials.

DETROIT

	Base per Lb.
Soft steel bars	3.19c.
Structural shapes	3.52c.
Plates	3.52c.
Floor plates	5.27c.
Hot-rolled annealed sheets (No. 24)*	4.04c.
Hot-rolled sheets (No. 10)** ..	3.24c.
Galvanized sheets (No. 24)....	4.82c.
Bands	3.49c.
Hoops	3.49c.
†Cold-finished bars	3.74c.
Cold-rolled strip	3.18c.
Hot-rolled alloy steel (S.A.E. 3100 Series)	5.44c.
Bolts and nuts, in cases, 70 and 10 per cent off list	
Broken cases .....	.70 per cent off

Prices delivered by truck in metropolitan Detroit, subject to quantity differentials covering shipment at one time.

* Base less 0.25c., 3500 lb. and over. Add 0.50c. per hundred lb. for broken bundles.

** Base less 0.25c., 1500 to 3749 lbs.; less 0.50c., 3750 to 7499 lb.; less 0.75c., 7500 lb. and over.

Galvanized and hot-rolled annealed may not be combined to obtain quantity deductions.

Country territory to be equalized on the Chicago plan.

MILWAUKEE

	Base per Lb.
Plates and structural shapes..	3.41c.
Soft steel bars, rounds up to 8 in., flats and fillet angles....	3.21c.
Soft steel bars, squares and hexagons	3.36c.
Hot-rolled strip	3.51c.
Hot-rolled sheets (No. 10)....	3.26c.
Hot-rolled annealed sheets (No. 24)	4.06c.
Galvanized sheets (No. 20) ..	4.76c.
Cold-finished steel bars.....	3.76c.
Cold-rolled strip	3.33c.
Structural rivets (keg lots)....	4.01c.
Boiler rivets, cone head (keg lots)	4.11c.
Track spikes (keg lots)	3.91c.
Track bolts (keg lots)	4.91c.
Black annealed wire	3.40c.
Com. wire nails	2.60c.
Cement coated nails	2.60c.

Per Cent Off List

Machine bolts, carriage bolts and lag screws .....	.70 to 75
Hot-pressed nuts, sq. and hex. tapped or blank (keg lots)....	.70

Prices given above are delivered Milwaukee.

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 9999 lb. On galvanized and No. 24 hot-rolled annealed sheets the prices given apply on orders of 400 to 1500 lb. On cold-finished bars the prices are for orders of 1000 lb. or more of a size.

ST. PAUL

	Base per Lb.
Mild steel bars, rounds	3.35c.
Structural shapes	3.55c.
Plates	3.55c.
Cold-finished bars	3.90c.
Bands and hoops	3.65c.
Hot-rolled annealed sheets, No. 24	4.20c.
Galvanized sheets, No. 24.....	4.90c.

On mild steel bars, shapes, plates and hoops and bands the base applies on 400 to 14,999 lb. On hot-rolled sheets, galvanized sheets and cold-rolled sheets base applies on 15,000 lb. and over. Base on cold-finished bars is 1000 lb. and over of a size.

BALTIMORE

	Base per Lb.
Mild Steel bars and small shapes	3.10c.
Structural shapes	3.10c.
Reinforcing bars .....	...prices on application
Plates	3.10c.
Hot-rolled sheets, No. 10.....	3.20c.
Bands	3.30c.
Hoops	3.55c.
Special threading steel.....	3.20c.
Diamond pattern floor plates ¼ in. and heavier	5.10c.
Galvanized bars and small shapes	5.60c.
Galvanized bands	5.80c.
Cold-rolled rounds, hexagons, squares and flats, 1000 lb. and more	3.88c.
All prices are for 2000 lb. and more. For second zone add 10c. per 100 lb. for trucking.	

List size extras of Aug. 15, 1935, and cutting extras to be added.

For cold-rolled products, list size extras from Jan. 1, 1936, and cutting extras to be added.

CHATTANOOGA

	Base per Lb.
Mild steel bars	3.46c.
Iron bars	3.46c.
Reinforcing bars	3.46c.
Structural shapes	3.66c.
Plates	3.66c.
Hot-rolled sheets No. 10.....	3.46c.
Hot-rolled annealed sheets No. 24*	3.41c.
Galvanized sheets, No. 24*....	3.96c.
Steel bands	3.71c.
Cold-finished bars	4.281c.

* Plus mill item extra.

MEMPHIS

	Base per Lb.
Mild steel bars	3.57c.
Shapes, bar size	3.57c.
Iron bars	3.57c.
Structural shapes	3.77c.
Plates	3.77c.
Hot-rolled sheets, No. 10.....	3.57c.
Hot-rolled annealed sheets, No. 24	4.37c.
Galvanized sheets, No. 24....	5.07c.
Steel bands	3.82c.
Cold-drawn rounds	4.04c.
Cold-drawn flats, squares, hexagons	6.04c.
Structural rivets	4.25c.
Bolts and nuts, per cent off list	65
Small rivets, per cent off list.	50

NEW ORLEANS

	Base per Lb.
Mild steel bars	3.45c.
Reinforcing bars	3.50c.
Structural shapes	3.65c.
Plates	3.65c.
Hot-rolled sheets, No. 10.....	3.65c.
Hot-rolled annealed sheets, No. 24	4.35c.
Galvanized sheets, No. 24....	4.95c.
Steel bands	4.05c.
Cold-finished steel bars	4.55c.
Structural rivets	4.25c.
Boiler rivets	4.25c.
Common wire nails, base per keg	\$2.45
Bolts and nuts, per cent off list	70

PACIFIC COAST

	San Francisco	Los Angeles	Seattle
Plates, tank and U. M.	3.50c.	3.60c.	3.55c.
Shapes, standard	3.50c.	3.60c.	3.55c.
Soft steel bars..	3.50c.	3.60c.	3.70c.
Reinforcing bars, f.o.b. cars dock			
Pacific ports..	2.45c.	2.45c.	2.45c.
Hot-rolled an- nealed sheets (No. 24)	4.20c.	4.15c.	4.40c.
Hot-rolled sheets (No. 10)	3.60c.	3.70c.	3.75c.
Galv. sheets (No. 24 and lighter)	5.00c.	4.40c.	5.00c.
Galv. sheets (No. 22 and heavier)	5.00c.	4.60c.	5.00c.
Cold finished steel			
Rounds	5.95c.	6.00c.	6.00c.
Squares and hexagons .	7.20c.	7.25c.	7.25c.
Flats	7.30c.	7.75c.	8.25c.
Common wire nails—base per keg less carload	\$2.90	\$2.90	\$2.90

All items subject to differentials for quantity.

REFRACTORIES PRICES

Fire Clay Brick

Per 1000 f.o.b Works

High-heat duty, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	\$45.00
High-heat duty, New Jersey...	50.00
High-heat duty, Ohio	40.00
Intermediate, Pennsylvania, Maryland, Kentucky, Mis- souri and Illinois	40.00
Intermediate, New Jersey	43.00
Intermediate, Ohio	35.00
Ground fire clay, per ton	7.00

Silica Brick

Per 1000 f.o.b Works

Pennsylvania	\$45.00
Chicago District	54.00
Birmingham	\$48 to 50.00
Silica cement per net ton	8.00

Chrome Brick

Per Net Ton

Standard f.o.b. Baltimore, Plym- outh Meeting and Chester....	\$45.00
Chemically bonded f.o.b. Balti- more, Plymouth Meeting and Chester, Pa.	45.00

Magnesite Brick

Per Net Ton

Standard f.o.b. Baltimore and Chester, Pa.	\$65.00
Chemically bonded, f.o.b. Balti- more	55.00

Grain Magnesite

Per Net Ton

Imported, f.o.b. Baltimore and Chester, Pa. (in sacks).....	\$45.00
Domestic, f.o.b. Baltimore and Chester, in sacks	40.00
Domestic, f.o.b. Chewelah, Wash.	22.00

RAW MATERIALS PRICES

PIG IRON

No. 2 Foundry

F.o.b. Everett, Mass.; Bethlehem, Birdsboro and Swedeland, Pa., and Sparrows Point, Md.	\$20.50
Delivered Brooklyn	22.9289
Delivered Newark or Jersey City	21.9873
Delivered Philadelphia	21.3132
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Buffalo; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	19.50
F.o.b. Jackson, Ohio	21.25
Delivered Cincinnati	19.82
F.o.b. Duluth	20.00
F.o.b. Provo, Utah	17.50
Delivered San Francisco, Los Angeles or Seattle	22.315
F.o.b. Birmingham*	15.88

* Delivered prices on southern iron for shipment to northern points are 38c. a ton below delivered prices from nearest northern basing point on iron with phosphorus content of .70 and over.

Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same.

Basic

F.o.b. Everett, Mass.; Bethlehem, Birdsboro, Swedeland and Steelton, Pa., and Sparrows Point, Md.	\$20.00
Delivered Boston Switching District	20.50
Delivered Newark or Jersey City	21.4873
Delivered Philadelphia	20.8132
F.o.b. Buffalo	18.50
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	19.00
Delivered Cincinnati	18.82
Delivered Canton, Ohio	20.3482
Delivered Mansfield, Ohio	20.8832
F.o.b. Jackson, Ohio	20.75
F.o.b. Provo, Utah	17.00
F.o.b. Birmingham	14.50

Bessemer

F.o.b. Everett, Mass.; Bethlehem, Birdsboro and Swedeland, Pa.	\$21.50
Delivered Boston Switching District	22.00
Delivered Newark or Jersey City	22.9873
Delivered Philadelphia	22.3132
F.o.b. Buffalo and Erie, Pa., and Duluth	20.50
F.o.b. Neville Island and Sharpsville, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Birmingham	20.00
Delivered Cincinnati	21.0807
Delivered Canton, Ohio	21.3482
Delivered Mansfield, Ohio	21.8832

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.	\$24.00
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Gray Forge

Valley or Pittsburgh furnace	\$19.00
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Charcoal

Lake Superior furnace	\$22.00
Delivered Chicago	25.2528

Canadian Pig Iron

Per Gross Ton

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	\$21.00
No. 2 fdy., sil. 1.75 to 2.75	20.50
Malleable	22.50
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	\$22.50
No. 2 fdy., sil. 1.75 to 2.25	22.00
Malleable	22.50
Basic	22.00

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.	
Domestic, 80% (carload)	\$75.00

Spiegeleisen

Per Gross Ton Furnace	
Domestic, 19 to 21%	\$26.00
50-ton lots 3-mo. shipment	24.00
F.o.b. New Orleans	26.00

Electric Ferrosilicon

Per Gross Ton Delivered	
50% (carloads)	\$69.50
50% (ton lots)	77.00
75% (carloads)	126.00
75% (ton lots)	136.00

Silvery Iron

Per Gross Ton	
F.o.b. Jackson, Ohio, 6.00 to 6.50%	\$22.75
For each additional 0.5% silicon up to 17%, 50c. a ton is added.	

The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Manganese 2 to 3%, \$1 a ton additional. For each unit of manganese over 3%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

Bessemer Ferrosilicon

F.o.b. Jackson, Ohio, Furnace

Per Gross Ton	
10.00 to 10.50%	\$27.75
10.51 to 11.00%	28.25
11.01 to 11.50%	28.75
11.51 to 12.00%	29.25
12.01 to 12.50%	29.75
12.51 to 13.00%	30.25
13.01 to 13.50%	30.75
13.51 to 14.00%	31.25
14.01 to 14.50%	31.75
14.51 to 15.00%	32.25
15.01 to 15.50%	32.75
15.51 to 16.00%	33.25
16.01 to 16.50%	33.75
16.51 to 17.00%	34.25

Manganese 2 to 3%, \$1 a ton additional. For each unit of manganese over 3%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Other Ferroalloys

Ferrotungsten, per lb. contained W del., carloads	\$1.30
Ferrotungsten, lots of 5000 lb.	1.35
Ferrotungsten, smaller lots	1.40
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr per lb. contained Cr delivered, in carloads, and contract	10.00c.
Ferrochromium, 2% carbon	16.50c. to 17.00c.
Ferrochromium, 1% carbon	17.50c. to 18.00c.
Ferrochromium, 0.10% carbon	19.50c. to 20.00c.
Ferrochromium, 0.06% carbon	20.00c. to 20.50c.
Ferrovanadium, del. per lb. contained V	\$2.70 to \$2.90
Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y.	\$2.50
Ferrocobaltititanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton	\$137.50
Ferrocobaltititanium, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract, per net ton	142.50
Ferrophosphorus, electric, or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton	58.50
Ferrophosphorus, electric, 24%, in carlots, f.o.b. Anniston, Ala., per gross ton with \$3 unitage, freight equalized with Nashville, Tenn.	75.00
Ferromolybdenum, per lb. Mo del.	95c.
Calcium molybdate, per lb. Mo del.	80c.
Silico spiegel, per ton, f.o.b. furnace, carloads	\$38.00
Ton lots or less, per ton	43.00
Silico-manganese, gross ton, delivered.	
2.50% carbon grade	85.00
2% carbon grade	90.00
1% carbon grade	100.00

Note: Spot prices are \$5 a ton higher except on 75 per cent ferrosilicon on which premium is \$10 a ton.

ORES

Lake Superior Ores

Delivered Lower Lake Ports

Per Gross Ton	
Old range, Bessemer, 51.50%	\$4.80
Old range, non-Bessemer, 51.50%	4.65
Mesabi, Bessemer, 51.50%	4.65
Mesabi, non-Bessemer, 51.50%	4.50
High phosphorus, 51.50%	4.40

Foreign Ore

C.A.F. Philadelphia or Baltimore

Per Unit	
Iron, low phos., copper free, 55 to 58% dry Spain or Algeria	10.25c.
Iron, low phos., Swedish, average, 68 1/2% iron	10.25c.
Iron, basic or foundry, Swedish, aver. 65% iron	9.50c.
Iron, basic or foundry, Russian, aver. 65% iron	Nominal
Man., Caucasian, washed 52%	26c.
Man., African, Indian, 44-48%	25c.
Man., African, Indian, 49-51%	26c.
Man., Brazilian, 46 to 48 1/2%	24c.

Per Net Ton Unit

Tungsten, Chinese, wolframite, duty paid delivered nominal	\$15.25 to \$15.50
Tungsten, domestic, scheelite delivered, nominal	15.00

Per Gross Ton

Chrome, 45% Cr ₂ O ₃ , lamp, c.i.f. Atlantic Seaboard (African)	\$17.50
45 to 46% Cr ₂ O ₃ (Turkish)	\$16.50 to 17.00
48% Cr ₂ O ₃ (African)	20.50
48% min. Cr ₂ O ₃ (Turkish)	19.25
Chrome concentrate, 50% and over Cr ₂ O ₃ , c.i.f. Atlantic ports	22.00
52% Cr ₂ O ₃ (Turkish)	21.75
48 to 49% Cr ₂ O ₃ (Turkish)	19.25

FLUORSPAR

Per Net Ton

Domestic, washed gravel, 85-5, f.o.b. Kentucky and Illinois mines, all rail	\$18.00
Domestic, barge and rail	18.50
No. 2 lump, 85-5, f.o.b. Kentucky and Illinois mines	19.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid	21.50
Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/2% silicon, f.o.b. Illinois and Kentucky mines	35.00

FUEL OIL

Per Gal.

F.o.b. Bayonne or Baltimore, No. 3 distillate	4.25c.
F.o.b. Bayonne or Baltimore, No. 4 industrial	3.75c.
Del'd Ch'go, No. 3 industrial	5.00c.
Del'd Ch'go, No. 5 industrial	3.77c.
Del'd Cleve'd, No. 3 distillate	5.75c.
Del'd Cleve'd, No. 4 industrial	5.50c.
Del'd Cleve'd, No. 5 industrial	5.00c.

COKE AND COAL

Coke

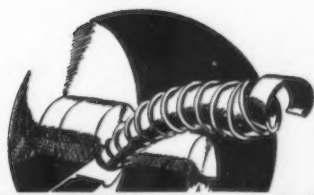
Per Net Ton

Furnace, f.o.b. Connells-ville, Prompt	\$3.75 to \$3.95
Foundry, f.o.b. Connells-ville Prompt	4.00 to 5.75
Foundry, by - product, Chicago ovens	9.00
Foundry, by - product, del'd New England	11.50
Foundry, by - product, del'd Newark or Jersey City	9.60 to 10.05
Foundry, by - product, Philadelphia	9.38
Foundry, by - product, delivered Cleveland	9.75
Foundry, by - product, delivered Cincinnati	9.50
Foundry, Birmingham	6.50
Foundry, by - product, St. Louis, f.o.b. ovens	8.00
Foundry, from Birmingham, f.o.b. cars docks, Pacific ports	14.75

Coal

Per Net Ton

Mine run steam coal, f.o.b. W. Pa. mines	\$1.50 to \$1.75
Mine run coking coal, f.o.b. W. Pa.	1.75 to 1.90
Gas coal, 1/4-in. f.o.b. Pa. mines	2.00 to 2.25
Mine run gas coal, f.o.b. Pa. mines	1.80 to 2.00
Steam slack, f.o.b. W. Pa. mines	1.00 to 1.25
Gas slack, f.o.b. W. Pa. mines	1.20 to 1.45



THIS WEEK'S MACHINE ...TOOL ACTIVITIES...

... Reports indicate purchases under recent levels.

o o o

... Small replacement buyers reappear with single machine orders.

o o o

... Larger manufacturers are indicating possible fall purchases.

By L. M. WAITE

IN active machine tool areas both buying and inquiry on the part of smaller organizations continue to be in reasonable volume. It is reported that a considerable number of these small buyers have reappeared in the market with further plans for moderate replacements.

A number of the larger manufacturing organizations have indicated at least a small part of their probable fall purchases and one or two orders of some importance were booked from foreign sources. Another foreign order involving a considerable number of machines is said to hinge on the matter of delivery, with makers studying probable domestic fall demand prior to indicating acceptance in whole or in part.

New York

DEALERS and direct representatives alike express satisfaction with a continued regularity of order placing, particularly as it pertains to single machines of the smaller types. There are said to be one or two larger inquiries which are having special tooling consideration at the hands of direct representatives and their principals. Dealers report renewed activity on two inquiries which may run to some 10 machines for varied purposes. It is reported, however, that favorable decisions for immediate order release covering these will, in all probability, concern only those makers who are struggling with heavy backlog conditions. While there appears to be a lesser number of individual inquiries at the moment, those which appeared during the week showed a greater tendency to involve more than one machine.

Pittsburgh

INQUIRIES have stepped up again this week. Orders remain at recent levels, but fair-sized sales are reported to be near the formal closing stage. One of these, involving 12 machines ranging in cost from \$2,500 to \$8,000, is expected to close within a few days. Dealers feel that the present lull in new orders is of a temporary nature and are optimistic as to volume of business during the remainder of the year. Deliveries showed little betterment over the past few weeks.

Detroit

DEALERS and factory representatives are concentrating on getting new machinery into plants and demonstrated so that production on the new cars may proceed. The chief factor in the market of the past week was an inquiry for approximately \$100,000 of equipment for machining the front wheel suspension of the new Packard six. This buy will largely duplicate the equipment now used on the "120," since the suspensions are identical. Buying of standard machinery by tool and die shops has fallen off after a very good season. Miscellaneous inquiries will maintain this market temporarily; at present, these particularly include the needs of refrigerator manufacturers. The delivery situation has eased to some extent, although certain special-purpose machines still require three to four months from date of purchase. Small tools are unusually active at this time.

Cleveland

MACHINE tool sales and inquiries in this territory have declined considerably. This slackening is attributed to absence of orders from automobile manufacturers and parts makers. Not much business in orders for parts necessary for new models has as yet been placed, and until these orders are distributed and releases are issued, few purchases of machinery are expected from parts-making plants.

Machine tool manufacturers report a good volume of sales, orders coming from widely diversified industries. The Japanese Government during the week placed an order with a Cleveland manufacturer for 30 to 40 turret lathes, this being the largest export order taken for some time.

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PLANT EXPANSION AND EQUIPMENT BUYING

... General Motors Corp., Detroit, has asked bids for new assembling plant at Linden, N. J., to cost with equipment \$5,500,000.

o o o

... DuPont Cellophane Co., New York, plans an expenditure of over \$700,000 for plant additions and equipment at Amphill, Va.

◀ NORTH ATLANTIC ▶

General Motors Corp., Detroit, closed bids on general contract Sept. 16 for new branch assembling plant for Buick, Oldsmobile and Pontiac cars at Linden, N. J., where 80-acre tract recently was acquired. Main unit will be one and two stories, 680 x 1080 ft., for all branches of assembling, including complete chassis and body works; one-story loading dock, 50 x 450 ft.; power house, 100 x 125 ft., and two-story and basement office building, 45 x 200 ft. Plant is scheduled for occupancy around close of year. Cost about \$5,500,000 with machinery. Structural steel framing has been let to American Bridge Co. Albert Kahn, Inc., Detroit, is architect and engineer. W. S. Roberts will be plant manager.

Port of New York Authority, 111 Eighth Avenue, New York, Frank C. Ferguson, chairman, asks bids until Oct. 14 for mechanical fans and accessories, motors and transmission equipment for West 178th Street vehicular tunnel (Contract HRB-21).

Adolf Gobel, Inc., Eleventh Avenue and Fortieth Street, New York, meat packer, has let general contract to Turner Construction Co., First and C Streets, N.W., Washington, for new plant at Benning, Washington, comprising four three-story units. Cost over \$100,000 with equipment. H. Peter Henschien, 59 East Van Buren Street, Chicago, is architect and engineer.

New York Central Railroad Co., 466 Lexington Avenue, New York, C. C. Warne, purchasing agent, asks bids until Sept. 29 for steel wheels, axles, plates, wire nails and other equipment (Serial Contract No. 13-1936).

DuPont Cellophane Co., Inc., 350 Fifth Avenue, New York, manufacturer of transparent wrapping materials, has plans for additions to plant at Amphill, Va., near mills of duPont Rayon Co., comprising one and multi-story units, primarily for production of cellulose film products. Facilities will be provided for employment of about 400 additional operatives. Cost over \$700,000 with machinery. Company is a subsidiary of E. I. duPont de Nemours & Co., Wilmington, Del.

Purchasing and Contracting Officer, Medical Section, Army Base, Brooklyn, asks bids until Oct. 5 for pipe wrenches, copper tubing tinner's shears, monkey wrenches, hand cross-cut saws, keyhole saws, wire nails, pliers and other supplies (Circular 18).

Board of Education, Central School District No. 1, Champlain, N. Y., plans

manual training department in new three-story central school. Cost about \$275,000. Financing is being arranged through Federal aid. A. W. Inman, 71 Clinton Street, Plattsburg, N. Y., is architect.

Clemens Mfg. Co., 54 Park Place, New York, manufacturer of school seating equipment and kindred specialties, has leased about 15,000 sq. ft. floor space of industrial property at Mill and Main Streets, Belleville, N. J., for new plant.

Crescent Insulated Wire & Cable Co., 319 Olden Avenue, Trenton, N. J., manufacturer of electric wires and cables, has asked bids on general contract for two-story addition, 60 x 100 ft. Cost over \$45,000 with equipment.

Colgate-Palmolive-Peet Co., 105 Hudson Street, Jersey City, N. J., manufacturer of soaps, etc., plans addition to branch plant at 58-64 Natalie Street, Toronto, operated in name of Colgate-Palmolive-Peet Co., Ltd., a Canadian subsidiary. Cost over \$90,000 with equipment.

Department of Parks and Public Property, City of Newark, City Hall, Newark, N. J., has plans for new hangar at municipal airport, Port Newark, 200 x 1045 ft., with lean-to extension for machine and mechanical shops. Cost about \$3,292,000 with equipment. Financing has been arranged through Federal aid. A. H. Armstrong, city engineer in charge of airport work, will supervise erection.

Walker-Turner Co., Inc., 639 South Avenue, Plainfield, N. J., manufacturer of tools and mechanical equipment, has acquired former local mill of Rivoli Silk Hosiery Co., about 33,000 sq. ft. floor space, for branch plant. Present works will be continued as heretofore.

State Purchase Commissioner, State House, Trenton, N. J., asks bids until Sept. 28 for one truck crane.

Wilkening Mfg. Co., 2000 South Seventy-first Street, Philadelphia, manufacturer of piston rings and kindred products, has plans for one and two-story addition, 100 x 150 ft., primarily for foundry extensions. Cost over \$75,000 with equipment. Silverman & Levy, 313 South Smedley Street, are architects.

B. F. Goodrich Co., Akron, Ohio, has let general contract to Robert E. Lamb Co., 841 North Nineteenth Street, Philadelphia, for new mill at Oaks, Pa., where property

recently was acquired. Cost over \$100,000 with equipment.

◀ NEW ENGLAND ▶

Bureau of Yards and Docks, Navy Department, Washington, plans extensions and improvements at naval torpedo station, Newport, R. I., including mechanical, wood-working and other shops. Appropriation of \$127,000 has been authorized, of which \$80,000 will be used for shop units.

Waterbury Farrel Foundry & Machine Co., Waterbury, Conn., has authorized plans for one-story addition on neighboring site recently purchased. Cost over \$40,000 with equipment. Fred A. Webster, Waterbury, is architect.

Station WTAG, 18 Franklin Street, Worcester, Mass., has let general contract to Lowell-Whipple Corp., 44 Portland Street, for new radio transmitting plant, including steel towers, antenna and other facilities. Cost over \$75,000 with equipment.

Public Service Co. of New Hampshire, Manchester, N. H., is arranging financing in amount of \$3,000,000 for expansion and improvements. Project includes purchase of hydroelectric power plant and power property of Amoskeag Mfg. Co., Manchester, textile manufacturer, which recently closed its mill permanently, and development of station for central power plant, at gross cost of \$2,225,000; new power dam at Eastman Falls, Pemigewasset River, improvements in other power stations and installation of equipment, including power line extensions.

Twin State Gas & Electric Co., Bennington, Vt., plans extensions and improvements in power plants and system, including transmission lines. Cost about \$200,000. Financing is being arranged.

◀ BUFFALO DISTRICT ▶

Elmira Foundry Co., Elmira, N. Y., plans one-story addition, installation to include sand-conditioning machinery and allied equipment, traveling crane, hoists, mold conveyers and other equipment. Cost close to \$100,000. Company is affiliated with General Electric Co.

Haloid Co., Haloid Street, Rochester, N. Y., manufacturer of photographic papers and other processed paper stocks, has let general contract to Gorsline & Swan Construction Co., 96 Pearl Street, for two-story and basement addition. Cost close to \$50,000 with equipment. S. Firestone, 59 South Avenue, is architect and engineer.

Feeders Mfg. Co., 57 Tonawanda Street, Buffalo, manufacturer of automobile radiators, has asked bids on general contract for steam power house. Cost about \$45,000 with equipment. Robert A. Hill, 1296 Hertel Avenue, is architect; Industrial Planning Corp., 271 Delaware Avenue, is consulting engineer.

◀ WASHINGTON DIST. ▶

York Street Brass & Aluminum Foundry, 125 East York Street, Baltimore, will raze present plant and replace with one-story foundry and finishing plant. Company has located temporarily at 610 Williams Street. Cost over \$45,000 with equipment. H. F. Wolfe is head.

Bureau of Yards and Docks, Navy Department, Washington, plans rebuilding assembling and repair shop at Naval Air Station, Norfolk, Va., destroyed by fire. Fund of \$150,000 has been authorized for building and equipment. Extensions and improvements will be made in steam power plant at Naval Operating Base, Norfolk, used for central heating service, for which fund of \$75,000 has been appropriated.

Jewell Ridge Coal Co., Jewell Ridge, Va., plans rebuilding part of coal-mining plant recently destroyed by fire, including tipples, shops and other structures. Loss about \$85,000 with equipment. Company headquarters are at Tazewell, Va.

Shenandoah Valley Electric Co-operative, Inc., Harrisonburg, Va., plans steam-electric generating plant for rural electrifica-

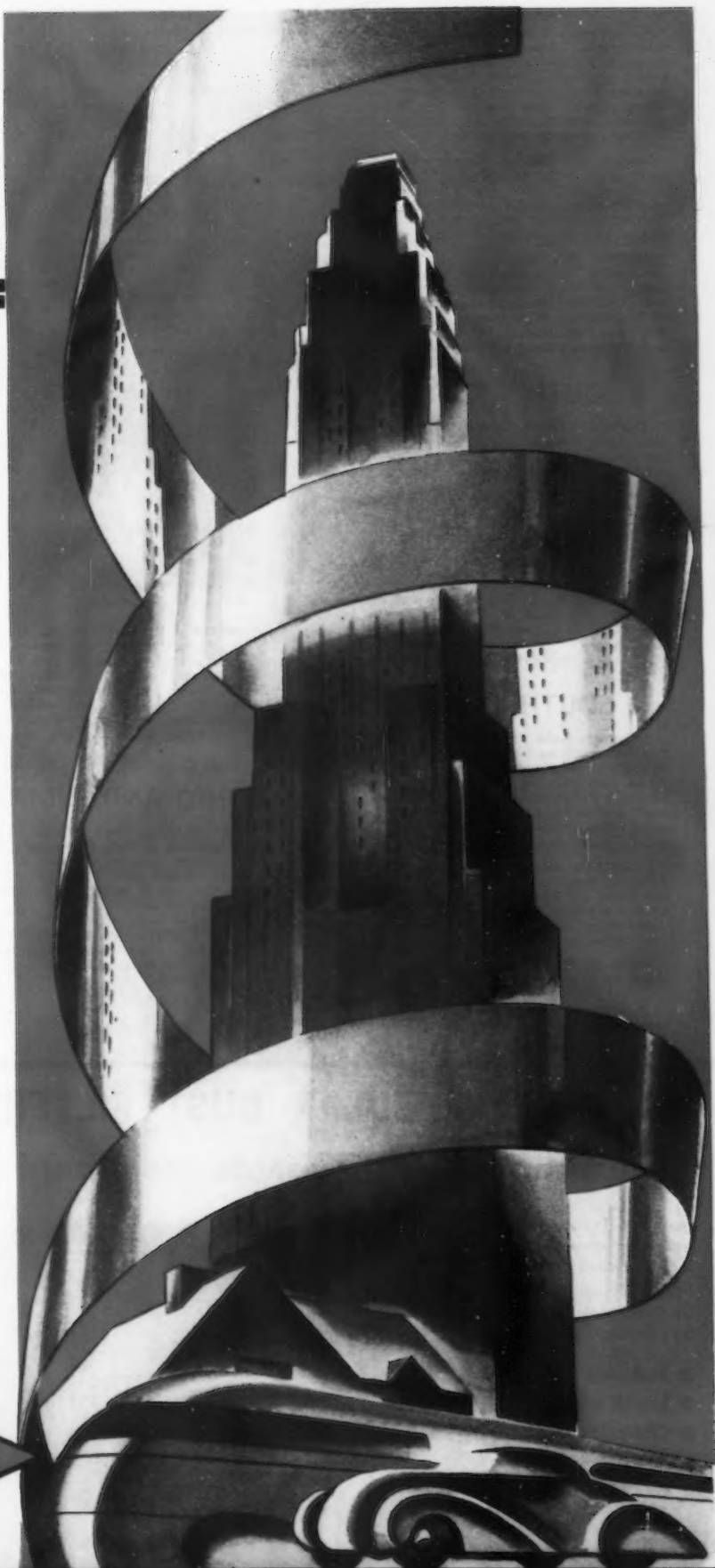
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tion system. Cost close to \$100,000 with equipment. Financing will be arranged through Federal aid. Organization has secured appropriation of \$125,000 for transmission and distributing lines in parts of Shenandoah, Augusta and Rockingham counties, about 100 miles, with service facilities; work to begin soon.

Board of District Commissioners. District Building, Washington, has secured fund of \$123,000 for improvements in waterworks pumping station on Bryant Street, including two motor-driven pumping units and auxiliary equipment.

Hallett Mfg. Co., 523 South Redondo Boulevard, Los Angeles, manufacturer of gasoline-filling station equipment, condensers and kindred products, has leased part of building at Montgomery Street and Key Highway, Baltimore, for new Eastern factory branch, storage and distributing plant.

◀ SOUTH ATLANTIC ▶

Caldwell County Rural Electrification Co-operative, Inc., Lenoir, N. C., care of Ransom R. Corpening, Gamewell, N. C., chairman, recently organized, plans transmission and distributing lines for rural electrification in parts of Caldwell County, about 400 miles, with service facilities. Fund of \$430,000 has been secured through Federal aid. Spoon & Lewis, Greensboro, N. C., are consulting engineers.

Ambrosia Baking Co., West Lee Street, Greensboro, N. C., has let general contract to John T. Hunt & Co., Greensboro, for one-story and basement, 110 x 140 ft. Cost about \$100,000 with ovens, mixing machinery, conveyers and other equipment.

◀ SOUTH CENTRAL ▶

Jefferson Lake Oil Co., New Iberia, La., has leased about 50 acres in Clemens Dome sulphur area, near Brazoria, Tex., and plans construction of mining and refining plant, with storage and distributing buildings, power house, maintenance and machine shop, and other mechanical departments. Cost about \$450,000 with machinery.

Lexington Brewing Co., Lexington, Ky., recently organized with capital of \$400,000 by John C. Bruckmann, head of Bruckmann Brewing Co., Cincinnati, plans new multi-story brewing plant on local site. Cost close to \$100,000 with equipment.

Swift & Co., Union Stock Yards, Chicago, have taken option on about 50 acres

at Lake Charles, La., and is considering new branch meat-packing plant at that location. Cost over \$90,000 with equipment.

Tennessee Valley Authority, Knoxville, Tenn., has secured appropriation of \$39,900,000 for power plant construction and development, transmission and distributing lines and other field structures. Of this sum, \$10,716,716 will be used for new hydroelectric generating plant and power dam at Pickwick Landing; \$8,006,372 for similar project at Guntersville, Ala., dam; \$5,563,000 for power dam and generating station at McReynolds dam, formerly known as Chickamauga dam; \$3,337,228 for Hiwassee dam development; \$1,336,000 for further work at Wheeler dam and power plant, and \$573,000 for additional installation at Norris dam.

◀ WESTERN PA. DIST. ▶

Duquesne Brewing Co., South Twenty-second Street, Pittsburgh, has asked bids for two plant additions, one and two-stories respectively, for expansion in mechanical-bottling works, and storage and distributing division. Cost about \$75,000 with equipment. F. F. Bollinger Co., Duss Avenue, Ambridge, Pa., is architect.

William Knight, West Salisbury, Pa., manufacturer of iron castings, machinery specialties, etc., has authorized plans for rebuilding one-story foundry and machine shop recently destroyed by fire. Cost over \$40,000 with equipment.

Standard Ultramarine Co., Huntington, W. Va., manufacturer of chemicals, colors, etc., has acquired property on St. Helen's Avenue, Toronto, Ont., as site for one-story branch plant. Superstructure will begin at once. Cost over \$75,000 with equipment. Company has organized Standard Ultramarine Co. of Canada, Ltd., to carry out project.

◀ OHIO AND INDIANA ▶

Braden-Sutphin Ink Co., 1736 East Twenty-second Street, Cleveland, has plans for two-story unit on Chester Avenue, 115 x 165 ft. Cost over \$100,000 with equipment. Warner & Mitchell, Buckley Building, are architects.

Broden Construction Co., 10255 Harvard Avenue, S.E., Cleveland, manufacturer of machinery for wire mills, cold-rolled steel plant equipment, etc., plans early removal

to one and two-story factory at 11700 Harvard Avenue, 30,000 sq. ft. floor space, recently leased, and will increase capacity.

City Engineering Co., 35 South St. Clair Street, Dayton, Ohio, manufacturer of special machinery, dies, parts, etc., has plans for one and two-story addition, 64 x 210 ft., and 40 x 64 ft. respectively, primarily for a machine shop. Cost over \$75,000 with equipment. Hillsmith & Co., 108 South Third Street, are engineers.

Public Utilities Department, Light and Power Division, City Hall, Cleveland, plans extensions and improvements in municipal electric power plant at East Fifty-third Street and Lake Front, with installation of new 25,000-kw. turbo-generator unit and auxiliary equipment. Cost close to \$3,000,000. Financing will be arranged through Federal aid and municipal bond issue.

Clopay Corp., York Street, Cincinnati, manufacturer of paper products, has asked bids on general contract for two-story addition to paper-converting plant, 100 x 220 ft. Cost over \$85,000 with equipment. Carl J. Kiefer, Inc., Schmidt Building, is consulting engineer.

Union Rural Electric Co-operative, Inc., Marysville, Ohio, recently organized, plans transmission and distributing lines in parts of Union, Logan, Delaware and Marion counties, about 280 miles, with service facilities. Fund of \$336,000 has been secured through Federal aid.

P. R. Mallory Co., Inc., 3029 East Washington Street, Indianapolis, manufacturer of electric controls and switches, welding electrodes, etc., has let general contract to O. W. Wise, 2537 Burton Avenue, for one-story addition. Cost about \$85,000 with equipment.

Board of Town Commissioners, Fremont, Ind., R. A. Gould, chairman, asks bids until Sept. 28 for two 100-gal.-per-min. turbine type pumping units with accessories, 50,000-gal. elevated steel tank on 125-ft. steel tower, electrical control apparatus, etc., for municipal waterworks. Cost about \$54,500. Charles H. Hurd, Architects' and Builders' Building, Indianapolis, is consulting engineer.

◀ MIDDLE WEST ▶

Arnold Schwinn & Co., 1718 North Kil-dare Avenue, Chicago, manufacturers of bicycles and parts, have let general contract to J. Emil Anderson & Son, 3659 Belle Plaine Avenue, for one-story addition, 50 x 225 ft. Cost about \$125,000 with machinery.

Barnes Drill Co., 814 Chestnut Street, Rockford, Ill., has let general contract to E. W. Schmeling & Sons, Inc., 1031 School Street, for two-story addition, 77 x 80 ft. Cost over \$30,000 with equipment.

Goodman Mfg. Co., 4834 South Halsted Street, Chicago, manufacturer of coal-mining and other heavy machinery, electric haulage locomotives and allied equipment, has let general contract to D. W. Boyd, 64 West Randolph Street, for one-story addition, primarily for a welding works and improvements in present plant. Cost about \$70,000 with equipment. Mundie, Jensen, Bourke & Havens, 39 South LaSalle Street, are architects.

Butler Brothers, 138 East Eighth Street, St. Paul, Minn., operating iron ore mining properties near Trommald, Minn., plans new concentrating plant to utilize low-grade ores. It will consist of one-story units, storage and distributing building, loading facilities, etc., with power house, machine and maintenance shop, and other structures. Cost over \$1,000,000 with equipment.

Northern Pacific Railroad Co., Jackson and Fifth Streets, St. Paul, Minn., has let general contract to A. D. Belanger Co., Seattle, for addition to engine house and locomotive shops at Missoula, Mont. Cost over \$60,000 with equipment. Bernard Blum is chief engineer.

Crowe Name Plate & Mfg. Co., 1749 West Grace Street, Chicago, manufacturer of metal name plates, metal novelties and kindred products, has taken out permit for two-story plant addition, 107 x 149 ft., for which general contract recently was let to Robert Goldie Co., 19 South LaSalle Street.

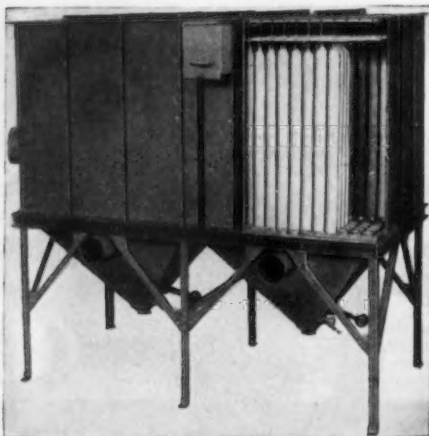
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ROXALIN *Flexible* FINISHES

**CELLULOSE & SYNTHETIC TYPES
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Cost close to \$100,000 with equipment. George W. Klewer, 7631 Eastlake Terrace, is architect.

Rockford Screw Products Co., 2501 Ninth Street, Rockford, Ill., has let general contract to Linden & Sons, Inc., 1102 Tenth Street, for one-story addition, 32 x 105 ft., primarily for storage and distribution.

Joseph Schlitz Brewing Co., Milwaukee, has announced intention to build new steam generating plant to cost \$450,000 and additional elevator capacity to cost \$150,000, following action of Milwaukee Common Council vacating alley dividing site. These projects are in addition to \$1,000,000 plant expansion program initiated in 1935 and now nearing completion. Joseph C. Schier is engineer.

Dane County Board, Madison, Wis., has engaged Balch & Lippert, Gay Building, to design new headquarters building, 80 x 400 ft., one-story, to cost \$100,000 with maintenance equipment, hoists, etc. Bids will be asked about Oct. 10 or 15. A. N. Johnson is county clerk.

◀ SOUTHWEST ▶

Board of Education, Library Building, Kansas City, Kan., George Widder, clerk, asks bids until Oct. 5 for equipment for Wyandotte high school, including steel cabinets, steel shelving, metal laboratory equipment, etc. Hamilton, Fellows & Nedved, Tower Court Building, Chicago, are architects; Joseph W. Radotinsky, Commercial National Bank Building, Kansas City, Kan., is associate architect.

St. Louis Independent Packing Co., 3815 Chouteau Street, St. Louis, meat packer, has asked bids on general contract for extensions and improvements in plant. Cost over \$75,000 with equipment.

Board of Education, Tulsa, Okla., has authorized plans for remodeling part of

Mark Twain school, Sand Springs Road, for installation of seven vocational training rooms for different branches of mechanical instruction. A. Thompson Thorne, 1613 South Florence Place, is architect; A. M. Atkinson, Thompson Building, is supervising architect.

Laclede Packing Co., 1701 North Prairie Street, St. Louis, meat packer, has plans for two-story addition. Cost close to \$50,000 with equipment.

City Council, Bay City, Tex., plans municipal electric power plant, with installation of three 500-hp. diesel engine-generator units and auxiliary equipment. Local electrical distribution system will be acquired and extensions made. Entire project will cost about \$225,000. Financing is being arranged through Federal aid. Garrett Engineering Co., 308 Hughes Street, Houston, Tex., is consulting engineer.

Dixon Packing Co., 108-10 Milam Street, Houston, Tex., food packer, has engaged Joseph Finger, Inc., National Standard Building, architect, to prepare plans for new one-story plant on three-acre tract at Calhoun Street and Houston Belt Terminal, recently acquired. Cost about \$75,000 with equipment.

◀ MICHIGAN DISTRICT ▶

L. A. Young Spring & Wire Corp., 9200 Russell Street, Detroit, has let general contract to O. W. Burke Co., Fisher Building, for one-story addition. Cost over \$70,000 with equipment. Christian W. Brandt, Madison Theater Building, is architect.

Wolverine Tube Co., 1411 Central Avenue, Detroit, manufacturer of brass and copper pipe and tubing, is arranging for sale of 50,000 shares of common stock, considerable part of proceeds to be used for additional plant equipment and working capital.

Arvey Corp., 6400 East Nevada Street, Detroit, manufacturer of automobile parts and equipment, has plans for two one-story additions, 150 x 200 ft., and 40 x 75 ft. Cost close to \$100,000 with equipment. I. M. Lewis, Inc., Cadillac Square Building, is architect.

Rudd Mfg. Co., Kalamazoo, Mich., manufacturer of water heaters and parts, has purchased for expansion plant and property formerly occupied by Kalamazoo Sanitary Mfg. Co. Main offices of company are at 2934 Smallman Street, Pittsburgh.

Campbell Rock Wool Co., Detroit, recently organized, care of O'Dell & Rowland, Marquette Building, architects, has acquired two-acre tract at Meyers Road and Lyndon Avenue, improved with one-story building. Structure will be remodeled and one-story addition erected for production of rock wool insulating products under a special process. Cost over \$50,000 with machinery. General contract for buildings has been let to W. E. Wood Co., 4649 Humboldt Street. Harry L. Pierson is president; Lee R. Campbell is chief engineer.

◀ PACIFIC COAST ▶

Bendix Aviation Corp., 105 West Adams Street, Chicago, plans new works for Pacific Coast trade at Los Angeles, where tract near city is now being selected. Cost close to \$1,000,000 with machinery. Company is affiliated with General Motors Corp.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Oct. 2 for spare parts for airplanes for San Diego Naval Station (Schedule 900-9994).

Union Air Terminal, 2726 Hollywood Way, Burbank, Cal., plans new hangar at local airport, 350 x 400 ft., with machine and reconditioning shops. Cost close to \$200,000 with equipment.

Feather River Distilleries, Inc., Marysville, Cal., recently organized, care of Houston & Houston, 1007 Seventh Street, Sacramento, attorneys and representatives, plans new distillery at first noted place, where property has been acquired. It will consist of one and multi-story units, including mechanical-bottling, storage and distributing buildings. Cost over \$100,000 with machinery. Oscar Krenz, head of Oscar Krenz Copper & Brass Works, Inc., 612 Bryant Street, San Francisco, is engineer; W. H. Bryant is general manager.

Union Oil Co., 2901 Western Avenue, Seattle, has taken out permit for one-story oil and asphalt storage and distribution plant, 32 x 105 ft. Cost about \$35,000 with equipment.

Purchasing Officer, Department of Interior, Federal Office Building, Seattle, asks bids until Sept. 30 for water wheel and electric equipment, including electric generator, exciter, switchboard and complete accessories (Proposal 61016).

Chevrolet Motor Co., Foothill Boulevard and Sixty-ninth Avenue, Oakland, Cal., has let general contract to Dinwiddie Construction Co., Crocker Building, San Francisco, for second-story addition to present one-story assembling works and improvements in present building. Cost close to \$100,000 with equipment. R. H. Cooley, 354 Hobart Street, Oakland, is engineer.

◀ FOREIGN ▶

Standard Oil Co. of New Jersey, Inc., 26 Broadway, New York, has concluded negotiations with Government of Venezuela, Caracas, for oil concession on large tract of Federal-owned lands. Agreement provides for drilling and development of extensive acreage, including construction of oil refinery, with steel tank storage and distributing facilities, power house, maintenance and machine shops, pumping station, loading racks and other structures. Cost over \$2,000,000 with machinery. Plant will be operated by Standard Oil Co. of Venezuela, Ltd., Caracas.

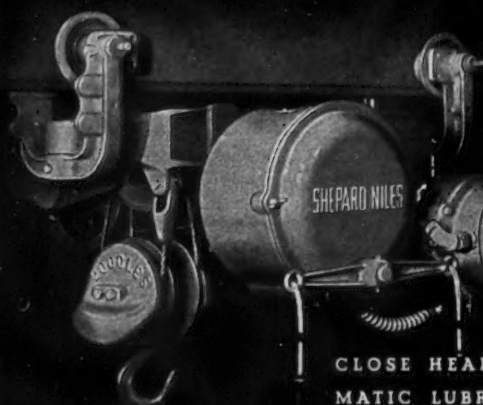
Italian Ministry of Finance, Rome, Italy, has authorized plans for electrification of group of state-owned railways and has appropriated fund of 1,200,000,000 lire (about \$93,000,000) to carry out project. Equipment installation will include transmission and feeder lines, power substations, locomotives and other equipment.

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Steam Shovels.—Marion Steam Shovel Co. Bulletin. Diversified uses illustrated in many industrial and construction installations. Manufacture of the company's "Groundhog" shovels is described in detail. *Bulletin 9-111.*

Special Equipment—for the process industries. Edge Moor Iron Works. Bulletin illustrating various types of work of which company is capable. Also circulars describing water tube boilers. *Bulletin 9-112.*

Multi-rotary Table.—American Foundry Equipment Co. Folder describing and illustrating airless abrasive method of cleaning fragile or intricate metal parts. *Bulletin 9-113.*

Metal Paint.—Koppers Products Co. Folder describing Koppax black metal paint for use on all metal surfaces including those where corrosion is present and up to 600 deg. F. *Bulletin 9-114.*

Industrial Processing Resins.—General Plastics, Inc. Booklet describing uses, such as impregnating wood, fabrics, pulp, etc., and general bonding, coating, insulating, waterproofing, etc. *Bulletin 9-115.*

Steel Stools.—Angle Steel Tool Co. Catalog and price list illustrating and describing various products, including stools, tables, cabinets, work benches, trucks, desks, stands and specialties. *Bulletin 9-116.*

Castable Refractory.—Quigley Co., Inc. Bulletin describing Cast-Refract, which is handled like concrete and can be cast into any shape or form. Useful for monolithic furnace linings, boiler door arches and jambs, furnace door linings, etc. *Bulletin 9-117.*

Industrial Products.—Johns-Manville Corp., 22 East 40th Street, New York. 60-page catalog, profusely illustrated, containing information and recommendations on high and low temperature insulations for all industrial needs; specifications for products; detailed information on roofings and sidings materials, industrial friction materials, conduit, electrical materials, pressure pipe and packings. *Bulletin 9-118.*

Steam Turbines.—Allis-Chalmers Manufacturing Co. New 36-page steam turbine Bulletin No. 1179, covering con-

densing automatic and extraction turbine frames for capacities from 500 to 5000 kilowatts. This bulletin also covers turbo-alternator construction. *Bulletin 9-119.*

Universal Motor Drive.—W. L. Steege Machinery Co. Descriptive booklet of motor drives adaptable to any cone pulley machine or tool, and also the Steege single pulley gear box motor drive. *Bulletin 9-120.*

Vibrating Screens.—Link-Belt Co. A 24-page illustrated catalog No. 1562, complete with clearance diagrams and dimension tables for unbalanced-pulley type and positive drive type screens. *Bulletin 9-121.*

Flow Meters.—Republic Flow Meters Co. Data Book No. 403. Features of CO₂ meters are presented one after another in their relation to efficient combustion. Illustrations include schematic diagram and flow sheet. *Bulletin 9-122.*

Filter Press.—J. C. Miller Co. "Production Filtration." A compilation of information for modern production platers. Describes and illustrates advantages to be gained in filtering and purifying plating solutions by methods adopted in the design of the equipment presented. *Bulletin 9-123.*

Industrial Snow Plow.—Easton Car & Construction Co. Bulletin. Gives details of utility of a snow plow accessory for use on industrial trucks in clearing plant driveways of snow accumulations. *Bulletin 9-124.*

Lock-Nut.—The Philip Carey Co. Folder. Illustrated details of a lock nut designed particularly for use in rapid assembly work. *Bulletin 9-125.*

Fire Extinguisher.—Pyrene Mfg. Co. Bulletin. Outlines and illustrates development and use of a mechanically, rather than chemically, created foam for application by gun to fires. *Bulletin 9-126.*

Water Treatment.—Creative Chemical Co. Folder. Descriptive of feeder to water lines for treating water in filter or storage tanks, as well as in water lines, with chemical solutions. *Bulletin 9-127.*

Light Diffusers.—Benjamin Electric Mfg. Co. Bulletin. Descriptive of dome diffusers for use in connection with combustion mercury and incandescent lamp lighting. *Bulletin 9-128.*

Salt Bath Furnace.—Ajax Electric Co., Inc. Bulletin. Details and diagrams operating principle of a new Ajax-Hultgren furnace which, through patented arrangement of electrodes in bath, provides an automatic stirring action. *Bulletin 9-129.*

Separators and Dryers.—National Separator Co. Bulletin. Illustrates and describes units of improved oil extractors and combination chip-drying baskets. *Bulletin 9-130.*

V-Belt Coupler.—Shippert Mfg Co. Bulletin. Outlines assembly and operation of Grip-Flex couplings as applied to V-belts in five standard coupling sizes and in special applications. *Bulletin 9-131.*

Power Presses.—Clearing Machine Corp. Bulletin. Covers a full line of single, double and triple-action presses and special types in a wide range of capacities. Gives details of units, construction and assembly. *Bulletin 9-132.*

Compressors.—York Ice Machinery Co. Bulletin. Illustrates and gives details of vertical, single acting and enclosed ammonia compressors. Operating action is shown by sectional diagram. *Bulletin 9-133.*

Barrel Trucks.—Barrett-Cravens Co. Bulletin. Illustrates and describes all-steel, electrically-welded, hand truck and method of handling barrel loads up to 800 lb. in either loose or solid contents. *Bulletin 9-134.*

Gear Generator.—Fellows Gear Shaper Co. Circular. Full description of an enveloping gear generator for finishing spur and helical, external and internal gears. Well illustrated and diagrammed. *Bulletin 9-135.*

Presses.—Kux-Lohner Machine Co. Folder. Illustrates and describes a line of rotary presses for pharmaceutical tablets and preforms of bakelite and plastic materials. Both single and double mechanical action machines are included. *Bulletin 9-136.*

Air-Tool Holder.—The Dallett Co. Folder. Illustrates "Retainer Shank" tool holder and tools for the woodworker and for chipping and cleaning welds. *Bulletin 9-137.*

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acknowledged as the **LEADER**
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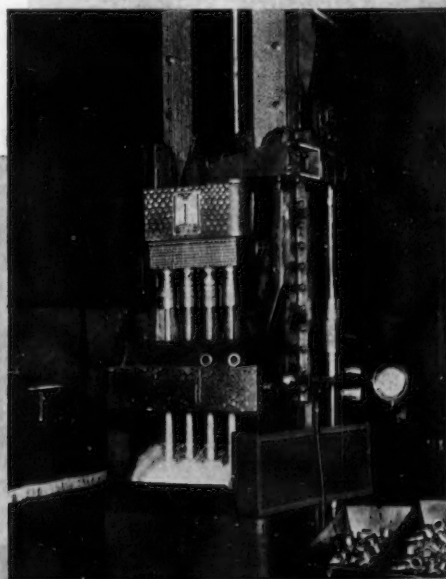
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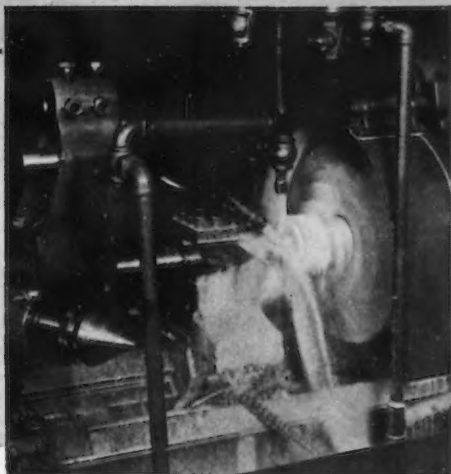
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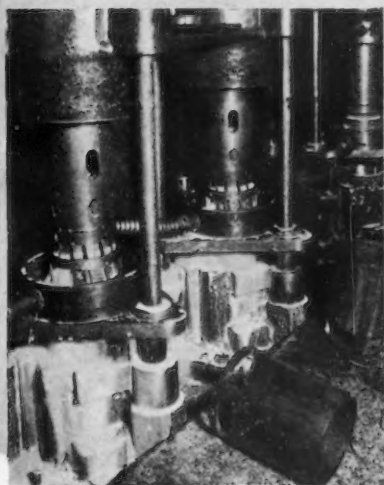
LATHE WORK

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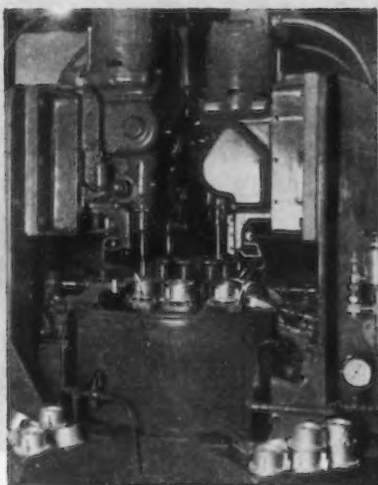
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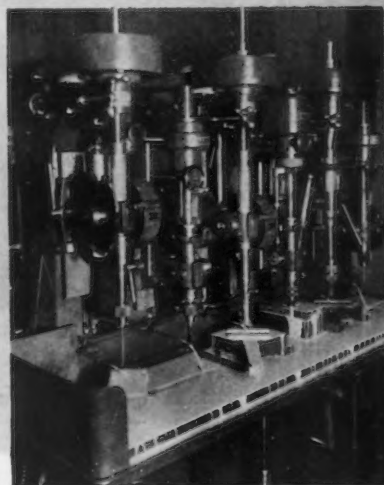
BORING

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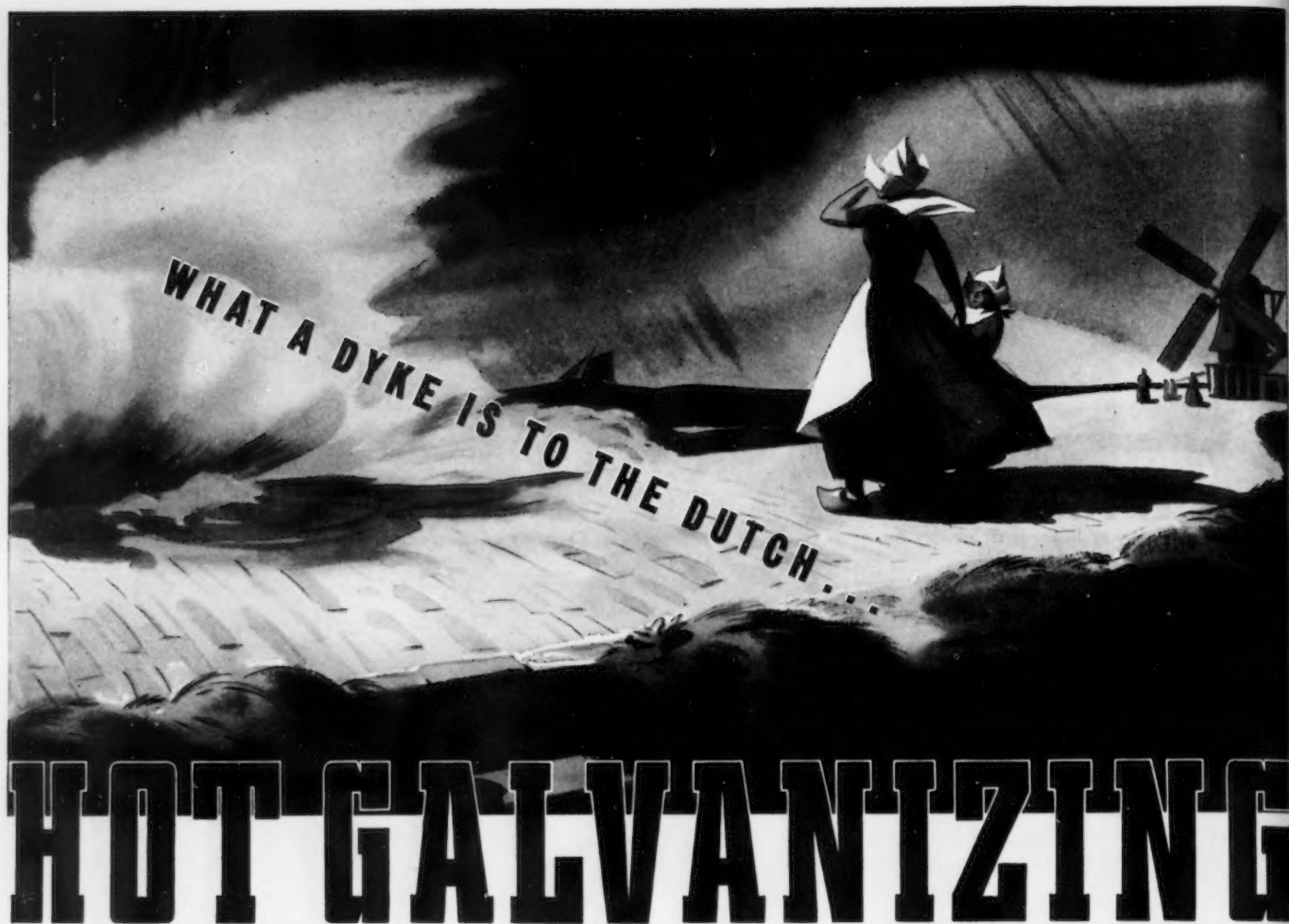
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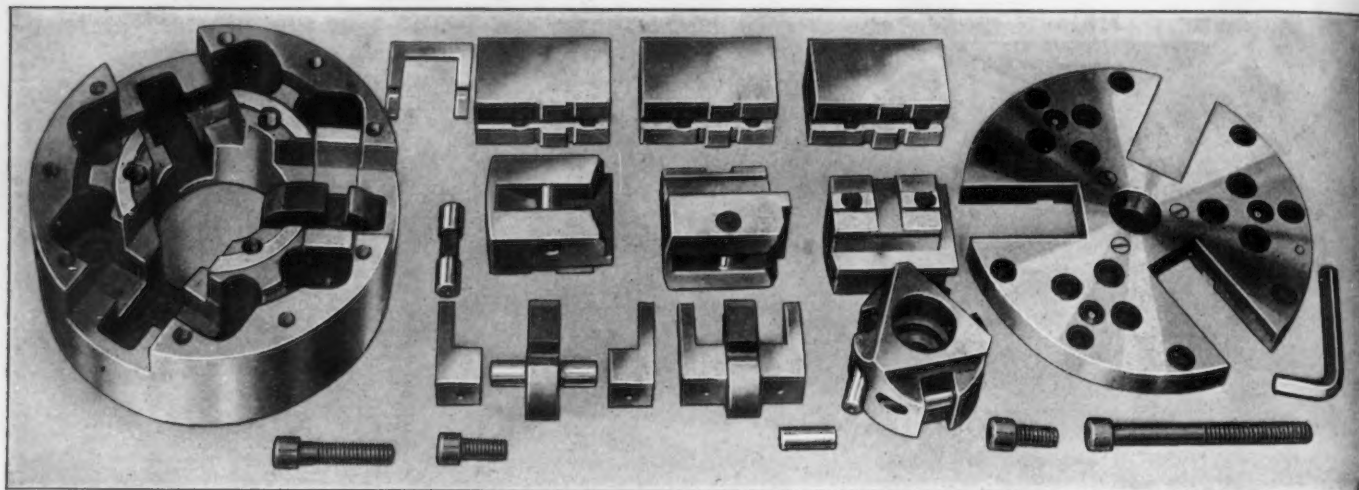
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New CUSHMAN POWER CHUCKS

THE No. 700A AND No. 800A SELF-CENTERING CHUCKS
(With a Lever Actuated Jaw Movement)

ADAPTED TO THE PROPOSED AMERICAN STANDARD SPINDLE NOSES—OCTOBER, 1935, DESIGN

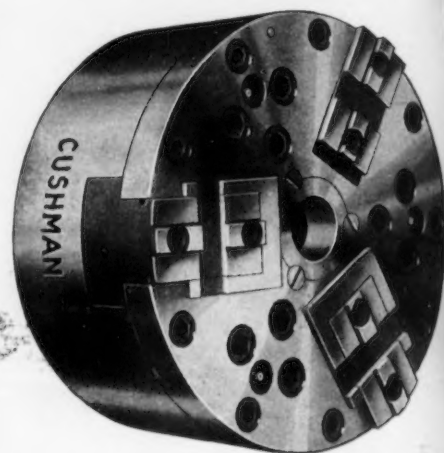


These are some others of those exceptional chucks of unprecedented design that Cushman builds when the need appears, and of which a detailed description is given in a recently issued Bulletin 152, "Power Chucking the Cushman Way."

Novel Features . . .

- 1 Levers with fulcrum pins *integral* (not loose members).
- 2 Renewable bushings for the lever pins.
- 3 Jaw and lever pins that rotate in their bearings.
- 4 Jaw movement of $\frac{7}{8}$ " in 8" and 10" Chucks; smaller size in proportion.
- 5 Jaw movement of 1" in 12" Chucks and larger.
- 6 Hardened steel face under which the jaws ride in wide bearings. The under side of the plate presents a flat surface that can be re-ground when and if wear takes place. With this construction jaws are always kept in alignment.
- 7 Jaws supported at inner ends against uplift.
- 8 Chucks are dirt-proof.

The working parts of these Chucks are of alloy steel, heat treated, and they are assembled in steel bodies. The holding accuracy of the Chucks is extreme and their general construction is of a kind to permit of continuous performance in high production work; they should give many years of good service, if reasonably lubricated and cared for.



Other CUSHMAN Products

See Catalogue No. 48—1936

WRENCH OPERATED CHUCKS
(For All Purposes)

COLLET CHUCKS and COLLETS
PORTABLE FACE PLATE JAWS
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(Bulletin 153A)

POWER UNITS
(Electrically Operated—Bulletin 152)

Refer Your Chucking Problems to Us. Lathe Chuck Builders and Chucking Engineers

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SAVES ALL ALONG THE LINE

Production Machinery . . . Tools . . . Products



THROUGHOUT scores of plants, chromium plating is now used as standard practice in the battle against costly wear and corrosion.

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Look into the many proved opportunities to save and to improve through the use of chromium plating. We would be very glad to cooperate. We would be glad, too, to tell you about our Licensing Arrangement, which makes available the chromium plating process and a valuable engineering service.

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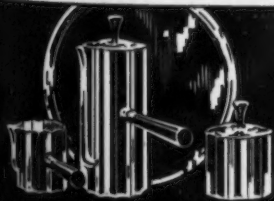
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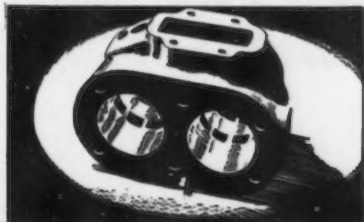


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Life of molds, dies, tools greatly increased by chromium plating



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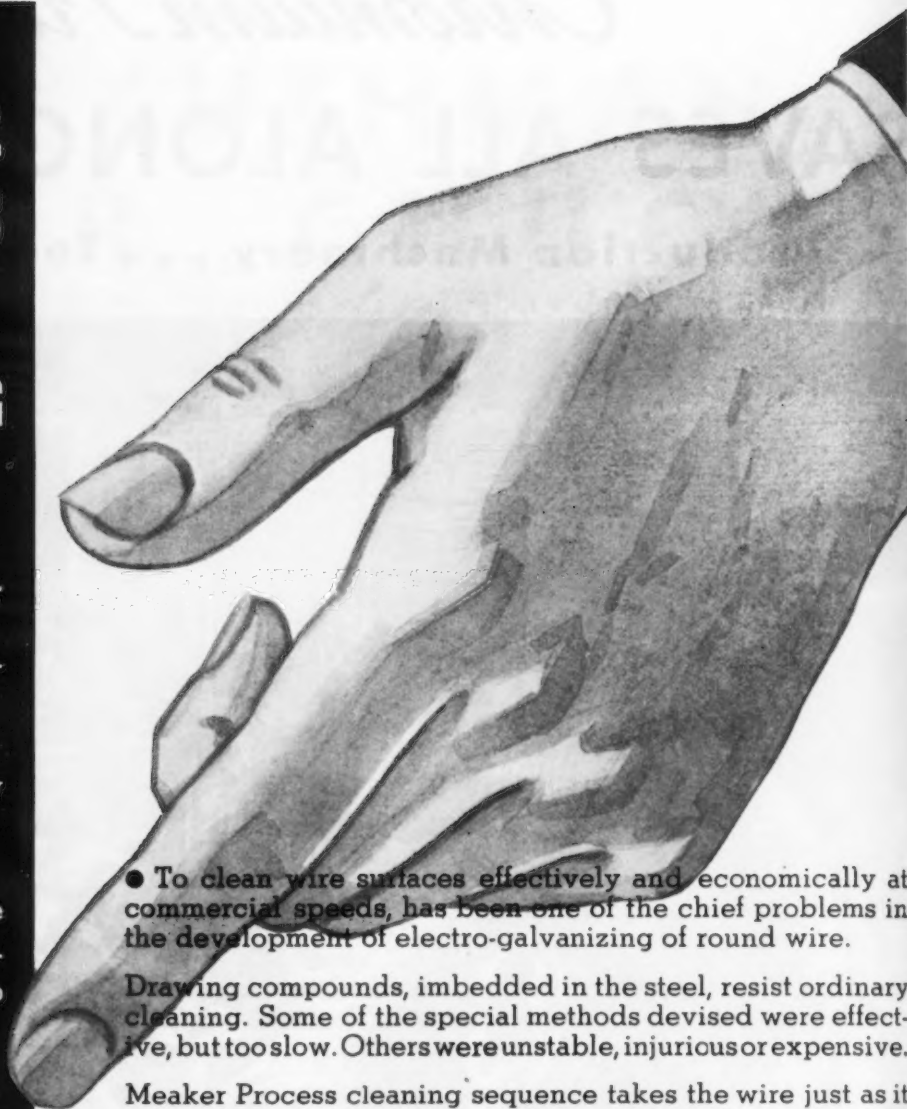


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for ELECTRO-GALVANIZING ROUND WIRE

This Process Provides:

- ★ Simplified plant operation
- ★ Cost equal to or below hot dip
- ★ Accurate, non-sensitive control of coating thickness from 1/20 oz. to 3 oz. zinc per sq. ft.
- ★ Stable, efficient cleaning sequence requiring minimum replenishment and control
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- ★ Operation at high current densities producing extremely dense and non-porous coatings
- ★ Compact, simplified installation



● To clean wire surfaces effectively and economically at commercial speeds, has been one of the chief problems in the development of electro-galvanizing of round wire.

Drawing compounds, imbedded in the steel, resist ordinary cleaning. Some of the special methods devised were effective, but too slow. Others were unstable, injurious or expensive.

Meaker Process cleaning sequence takes the wire just as it comes from the die, cleans it thoroughly and rapidly without the use of excessively corrosive chemicals or high temperatures and without affecting the physical properties of the wire.

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The complete Meaker Process for Electro-Galvanizing round wire is in successful commercial operation. We are prepared to prove this process up for you as we have for those who are now producing or are preparing to produce this new and superior type of zinc coated wire.

Backed by thirty-seven years' engineering experience in solving electro-galvanizing problems for the industry. Write or wire for details.



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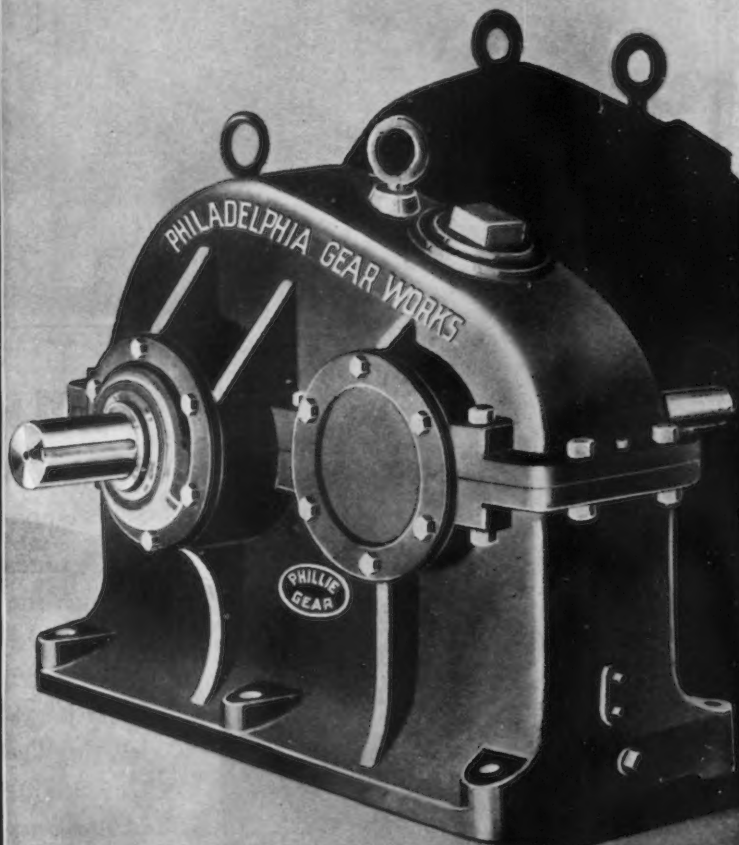


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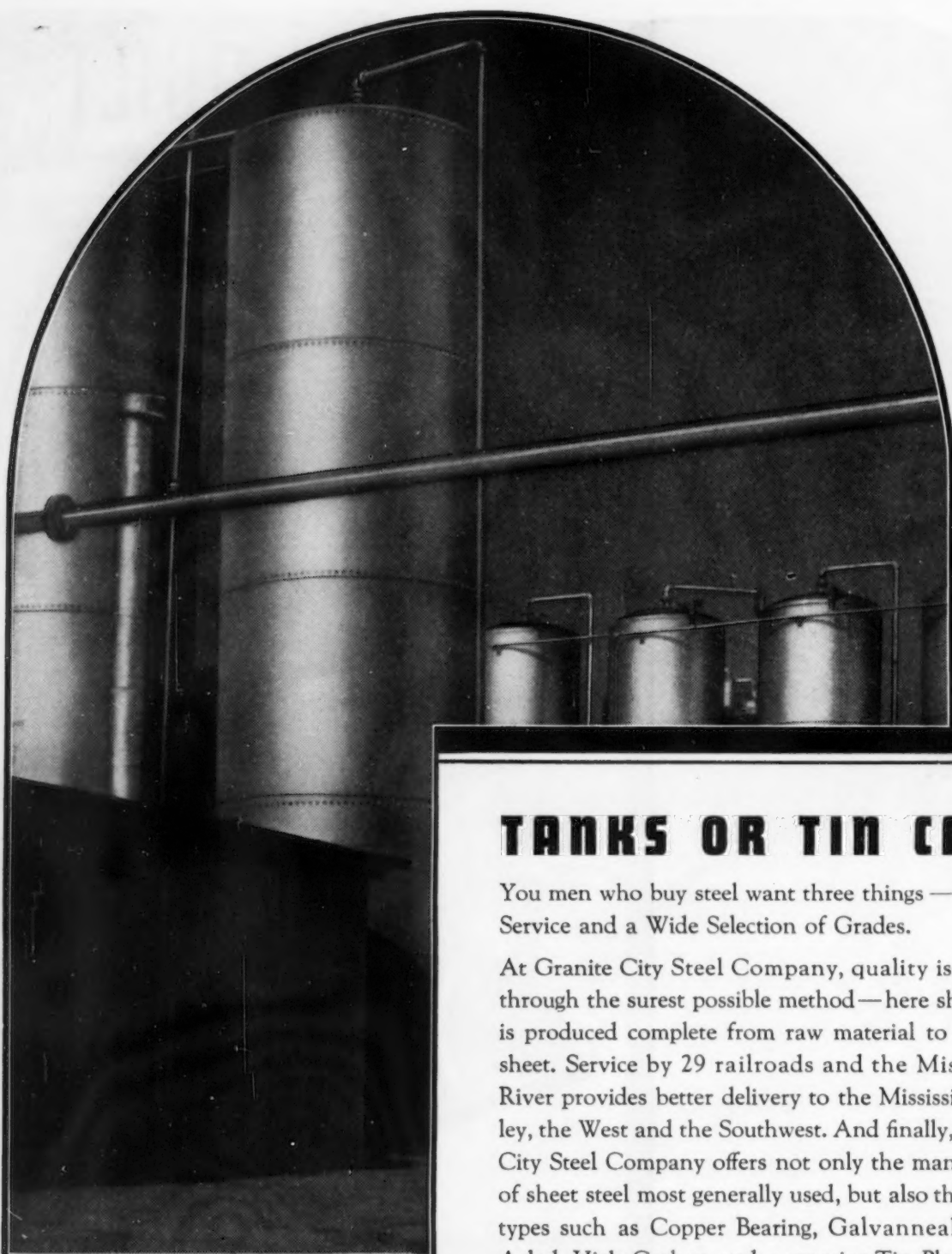


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PLATES AND
TIN PLATE**

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At Granite City Steel Company, quality is guarded through the surest possible method — here sheet steel is produced complete from raw material to finished sheet. Service by 29 railroads and the Mississippi River provides better delivery to the Mississippi Valley, the West and the Southwest. And finally, Granite City Steel Company offers not only the many grades of sheet steel most generally used, but also the special types such as Copper Bearing, Galvannealed, Ing-Aclad, High Carbon and a superior Tin Plate . . . A 58-year-old service that meets the requirements of every business from can manufacturer to tank builder.

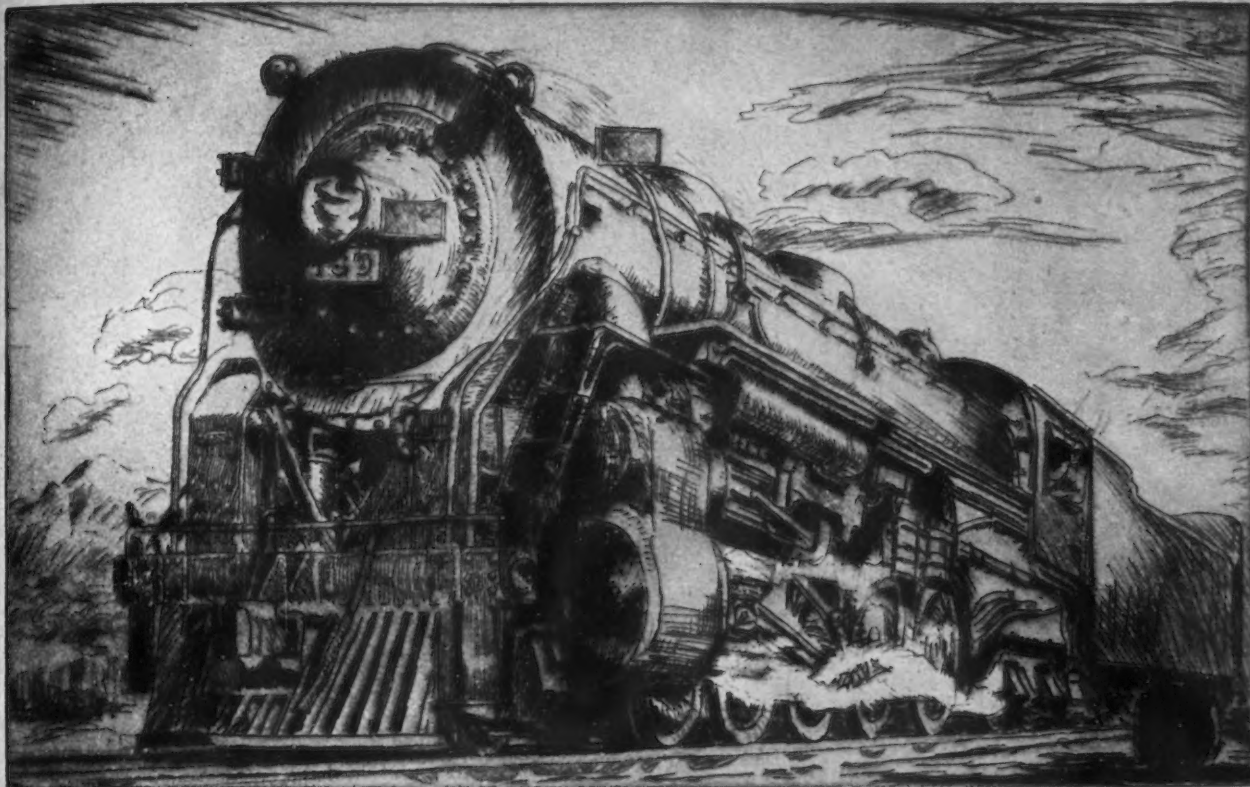


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GENERAL OFFICES: KOPPERS BUILDING ... PITTSBURGH

ATLANTA CHICAGO CINCINNATI CLEVELAND DETROIT NEW YORK NORFOLK PHILADELPHIA WINSTON-SALEM

THE IRON AGE, September 24, 1936—115

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BALES
BARRELS
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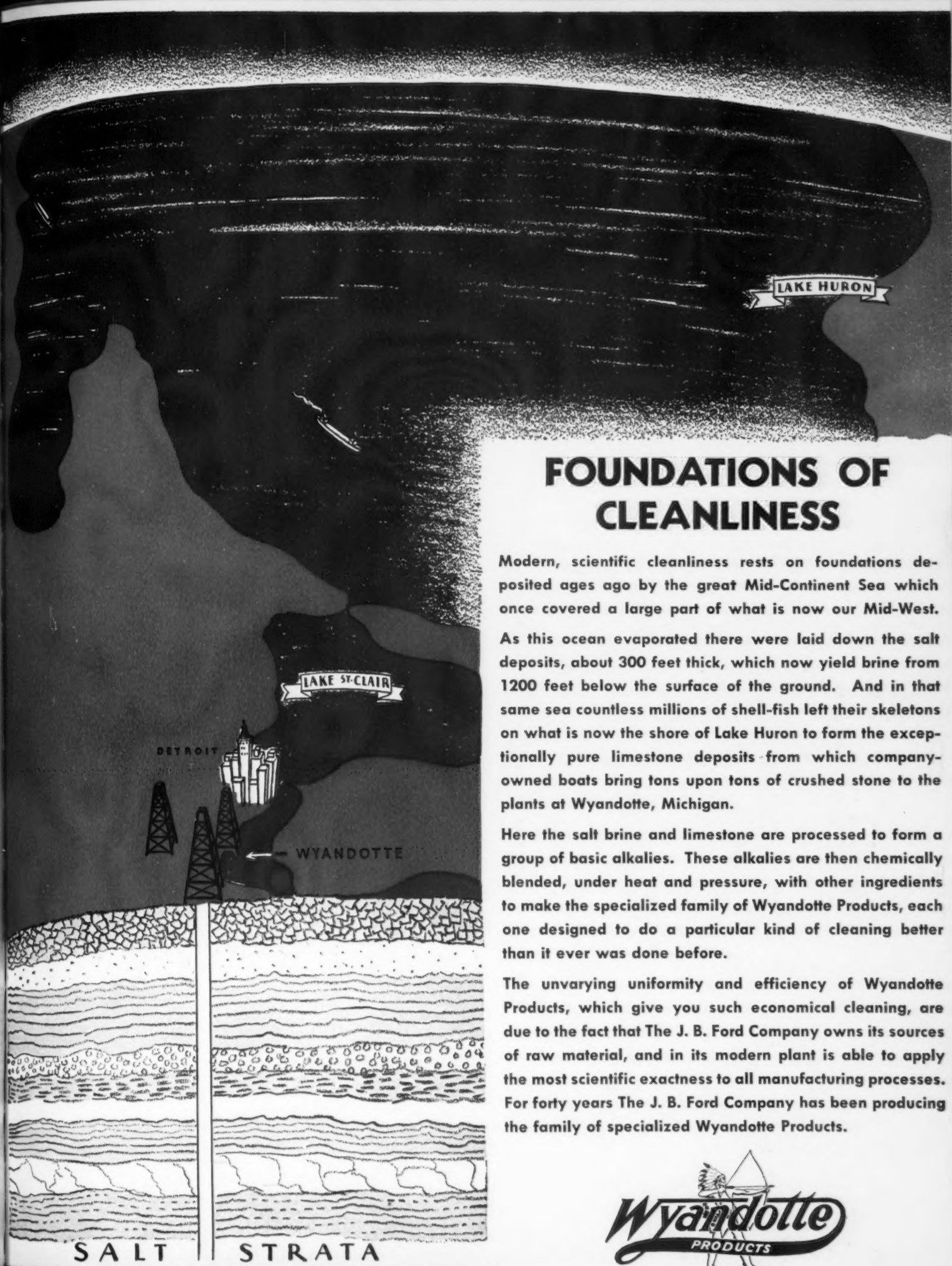


● This Baker tilting-telescoping Fork Truck, Type IMFH, stacks these pallets of flour to the roof trusses and permits the use of **ALL** the storage space in the warehouse. Baker Fork Trucks are made in capacities up to 8500 lbs. A Baker engineer will gladly show you how they will fit into your production or storage plan and make savings as is being done here. • There is no obligation for a survey of your plant.



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FOUNDATIONS OF CLEANLINESS

Modern, scientific cleanliness rests on foundations deposited ages ago by the great Mid-Continent Sea which once covered a large part of what is now our Mid-West.

As this ocean evaporated there were laid down the salt deposits, about 300 feet thick, which now yield brine from 1200 feet below the surface of the ground. And in that same sea countless millions of shell-fish left their skeletons on what is now the shore of Lake Huron to form the exceptionally pure limestone deposits from which company-owned boats bring tons upon tons of crushed stone to the plants at Wyandotte, Michigan.

Here the salt brine and limestone are processed to form a group of basic alkalies. These alkalies are then chemically blended, under heat and pressure, with other ingredients to make the specialized family of Wyandotte Products, each one designed to do a particular kind of cleaning better than it ever was done before.

The unvarying uniformity and efficiency of Wyandotte Products, which give you such economical cleaning, are due to the fact that The J. B. Ford Company owns its sources of raw material, and in its modern plant is able to apply the most scientific exactness to all manufacturing processes. For forty years The J. B. Ford Company has been producing the family of specialized Wyandotte Products.



THE J. B. FORD COMPANY

• **WYANDOTTE, MICH.**

FOR ALL YOUR CLEANING PROBLEMS

Built on the strong foundation of uniform quality, Wyandotte Products offer the metal industry a complete family of specialized cleaning materials which efficiently and economically solve their cleaning problems.

No mechanical mixture of commercial alkalies can begin to give you the efficiency and economy of the chemically blended and balanced alkalies which go into Wyandotte Products.

For all kinds of work and types of equipment there is a Wyandotte Metal Cleaner that will give you better cleaning at lower cost per unit of work done.

Your Wyandotte Service Representative is a trained cleaning expert, able and ready to work with you to help you solve your cleaning problems. His services place you under no obligation. And remember that all Wyandotte Products are sold under a guarantee unless your money will be refunded unless you are satisfied with the results Wyandotte gives you.

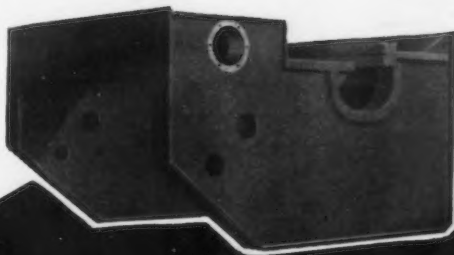
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WYANDOTTE, MICH.

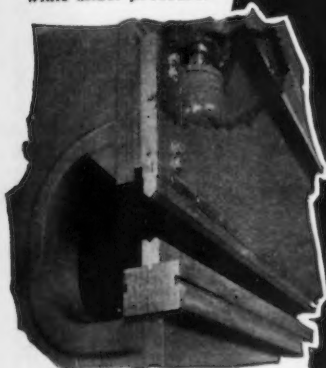
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strongest and most rigid
on the market today



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Steelweld Brakes are
easily installed . . . no
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Easily read micrometrically
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STEELWELD BRAKES

• Deep—18 inch throats . . . easy installation without bothersome pits . . . accurate and speedy pressure setting of the dies . . . these are only three of the exclusive features only Steelweld Brakes can give you.

Of greater interest to operating men interested in eliminating breakdowns and production delays is the mono-steel frame construction. Fabricated from rolled steel and electrically arc welded, the Steelweld frame, size for size, is the stiffest and most rigid available on any press brake at any price. It minimizes deflection—keeps the ram and bed parallel to within .006 inches even under full loading. Vertical deflection is practically non-existent. The ram does

not deflect in the guides. Developed power is used in bending the work instead of the frame. Savings in motor requirement over older designs range from 70 to 20%. Steelweld Brakes positively cannot brake their frames or tie themselves up. The ram stalls—not from frame deflection—but only in response to too great overloading . . . can be backed off without trouble or damage to any part.

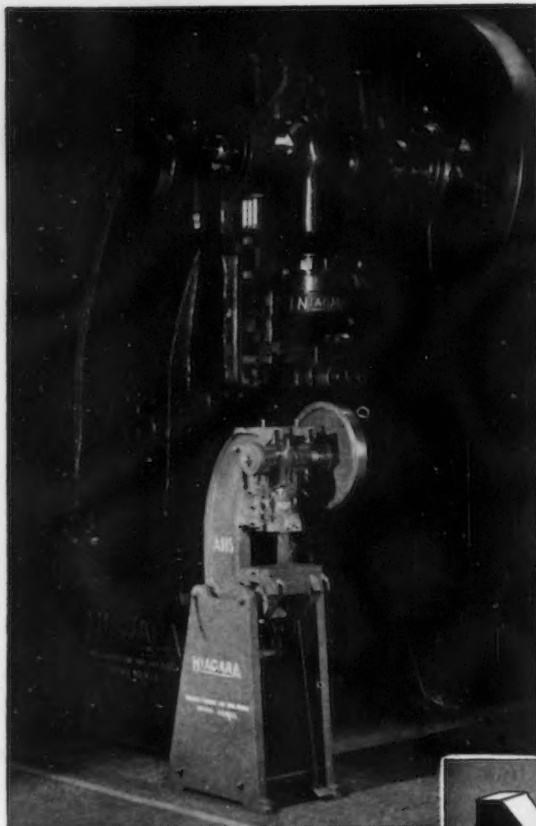
More complete details and descriptive literature will be sent on request. What are your Press Brake requirements?

THE STEELWELD MACHINERY CO.
E. 70th St. at Machinery Ave., Cleveland, Ohio.

REPRESENTATIVES AND DISTRIBUTORS IN THE PRINCIPAL CITIES

STEELWELD

PRESS BRAKES



NIAGARA MACHINE & TOOL WORKS
BUFFALO, N. Y.

Branches — DETROIT . . . NEW YORK

How **NIAGARA** Master Series A SMALL SIZE PRESSES *give you* **BIG PRESS DESIGN**

Manufacturers of small stampings will find the same general design in the new smaller size Niagara Inclined Presses that has already made the new improved larger sizes the talk of experienced production men.

Strength, rigidity, high productive output, safety, long die life, low maintenance cost—you get them all with these smaller size Master Series Niagara Presses with 1¼, 1½, 1¾ and 2 inch shafts.

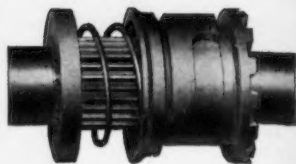
New frame scientifically designed for strength and rigidity.

New 14-point engagement Sleeve Clutch with built-in Single Stroke and Positive Lock Mechanism.

New double "V" gibs, adjustable and removable.

New slide with Breech Block die clamp and equal support for dies, center to front and rear.

Write for new Bulletin 58-E showing latest developments in Niagara Inclined Presses from 1¼" to 5½" diameter shafts.



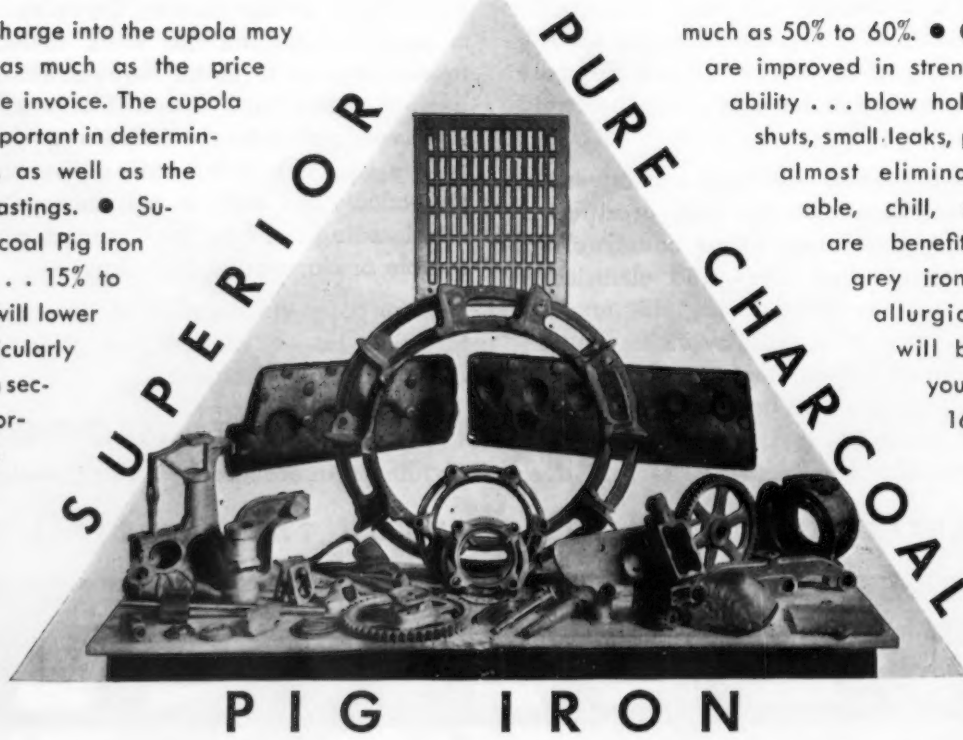
**NEW NIAGARA PATENTED
14 POINT SLEEVE CLUTCH**

Safety, long life, maximum strokes per minute are performance features of this new Niagara Sleeve Clutch equipped with built-in single stroke mechanism.

NIAGARA

PROFIT DEPENDS ON CHARGING

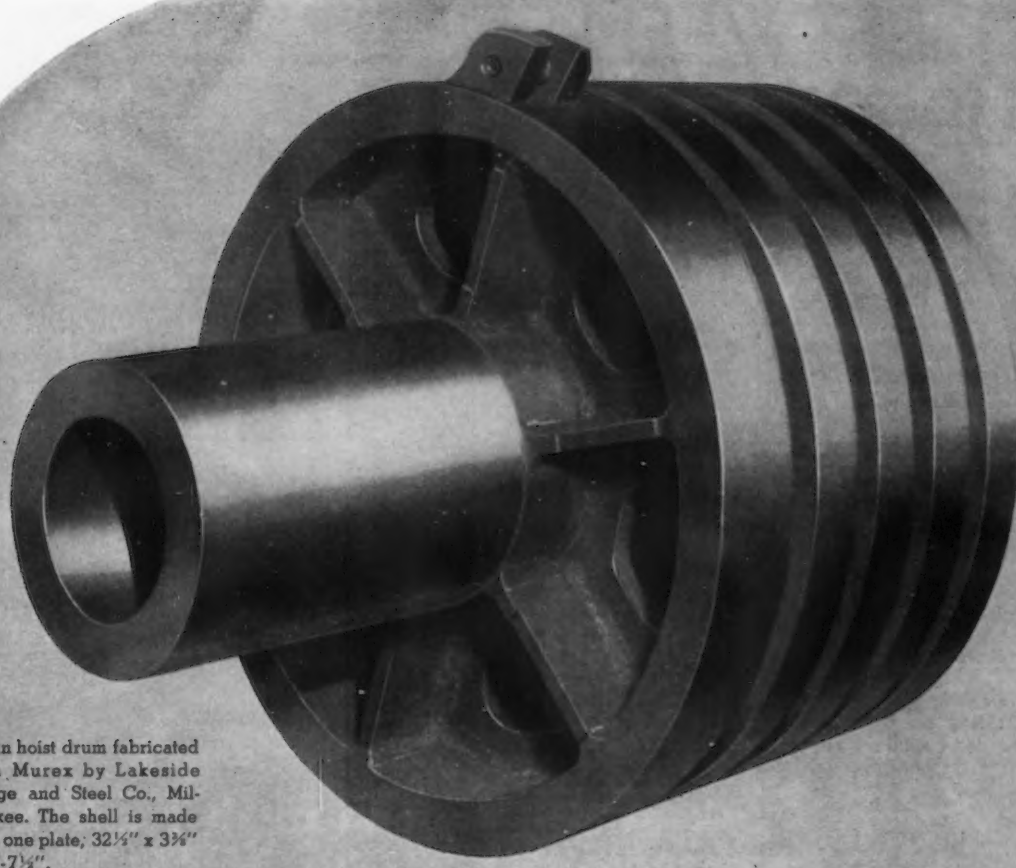
● And what you charge into the cupola may influence profit as much as the price you charge on the invoice. The cupola charge is most important in determining scrap losses, as well as the quality of the castings. ● Superior Pure Charcoal Pig Iron in the charge . . . 15% to 25% of the total, will lower scrap losses, particularly on castings of thin sections, intricate coring, etc. Records show scrap reductions as



much as 50% to 60%. ● Grey iron castings are improved in strength and machinability . . . blow holes, mis-runs, cold shuts, small leaks, pin holes, etc., are almost eliminated. ● Malleable, chill, and white iron are benefited as well as grey iron. ● Our metallurgical department will be glad to help you select from the 16 grades of Superior Pure Charcoal Pig available.

SUPERIOR CHARCOAL IRON CO., GRAND RAPIDS, MICHIGAN

DEBEVOISE-ANDERSON CO., INC. *Eastern Representative* • NEW YORK • BOSTON • PHILADELPHIA



Chain hoist drum fabricated with Murex by Lakeside Bridge and Steel Co., Milwaukee. The shell is made from one plate; $32\frac{1}{4}'' \times 3\frac{3}{4}'' \times 10'-7\frac{1}{2}''$.

Better Hoist Drums with Welding — **BETTER WELDING WITH MUREX**

Difficulty in casting made it hard to obtain perfectly sound metal in the cast steel drums of heavy electric hoists made by Lakeside Bridge and Steel Co. So, compromise construction was adopted, with cast hubs and ribs and rims of welded rolled steel. And, to make sure of obtaining welds of high quality, all welding was done with Murex Electrodes.

Careful inspection revealed only a single tiny pin hole in all the welding in the first four drums made the new way. The homogeneity and ductility of the Murex deposited metal was also shown in machining the deep grooves in the rims. The spiraling of the cut chips was continuous with no breaks occurring when the tool passed

over the weld metal in the longitudinal seams.

There is no doubt about it, Murex has set a new standard for electrode performance. In your plant, too, aside from providing weld metal of unsurpassed quality, these spiral-wound, heavy-coated electrodes can reduce welding costs by being easier to use, by burning with a short, quiet arc, and by depositing more weld metal per hour, as well as per pound of electrodes consumed. We will gladly send a pamphlet. Or, a representative will call to show you what Murex can do. Write today. Metal & Thermit Corporation, 120 Broadway, New York. Albany—Chicago—Pittsburgh—So. San Francisco—Toronto.

MUREX
Spiral Wound
HEAVY COATED ELECTRODES



JUST BETWEEN US TWO

Raps Style Sheet

DON MASSON, Bakelite's technical editor writes that our style sheet errs. It isn't bakelite. It's Bakelite—a trade-marked name, not a common noun.

The lower-case letter is, of course, an honorable distinction. When your name is lower-cased you have definitely arrived, as, for instance, Messrs. babbitt, bessemer, bunsen, corliss, diesel, glauher and pilot, all small-lettered by THE IRON AGE. Then there are Herr fahrenheit and Monsieur centigrade.

Still outside the lower-case hall of fame are Messrs. Baumé and Brinell. It seems to us they have a kick coming and that their cases should be reviewed at the next meeting of the gods who decide when a proper name becomes part of the language.

Meanwhile, Mr. Masson's petition for restoration to upper-case has been laid in the laps of the editors.

Einsteins

WITH one hand tied behind their backs, A.E.K. and "Tryand-checkit" solved the brain-wrecking dog problem published here, and plead for something hard enough to engage their full cerebral voltage.

A copy of Elsie Dinsmore's "How I Made the Daisy Chain" will be sent to the first one who can stall their motors. These boys are tough, so don't send in anything easy. A.E.K. remarks on something outside our bailiwick, so his letter is being passed on to the editors.

Orchid

SIMPLICITY in any form of expression, oral, written or acted, marks the master. He achieves the maximum effect with the minimum of mental effort on the part of his audience.

It sees to us that the zenith of simplicity in industrial advertising is approached by General Electric's spread, "You Can't Avoid Spatter Loss," on pages 12-13 of the Sept. 10 IRON AGE. An obeisance to the creator.

All Ages

WE see that someone is starting a trade paper called *Trailer Age*. Probably John Williams, founder of THE IRON AGE, was first to incorporate "Age" in a trade paper name, and if he wasn't, we aren't a bit interested in finding out.

Anyway, THE IRON AGE fared pretty well, so along came a host of other Ages, and now there are:

Automatic Age	Hardware Age
Brewery Age	Insurance Broker-Age
Canning Age	Knitted Outerwear-Age
Ceramic Age	Laundry Age
Coal Age	Marine Age
Financial Age	Motor Age
Furniture Age	Railway Age
Gas Age-Record	Rubber Age
	Taxi Age

It would be nice if someone started a tailoring paper and called it the *Garb Age*, or worse still, the *Sew Age*. But speaking of trailers, the best survey we have seen of that meteoric industry was presented in our issues of Aug. 20 and 27th, by Frank J. Oliver, our Detroit editor.

Striking Head

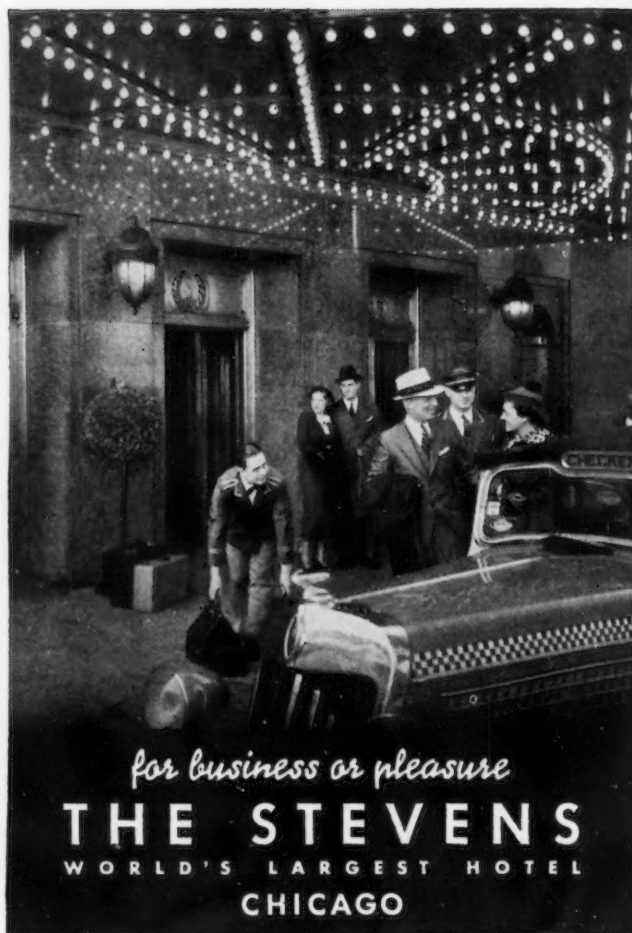
"Every 36 seconds eye injuries strike."—American Optical Co.

What Of It Dept.

A COUPLE of weeks ago we ran an item about the number of F's, large or small, in the sentence, "The Famous Valspar Finish is the result of scientific study combined with the experience of years." Hosts of readers, not less than six, said, "There are three F's, and what of it?"

Actually there are five—in *Famous*, *Finish*, *of*, *scientific*, and *of*. We know of only one individual who counted five the first time, which proves something or other, probably that people don't care how many F's there are in a sentence. Maybe they are fonder of C's and would like to count the number in, "The Iron Age is the world's greatest industrial paper."

—A.H.D.



for business or pleasure
THE STEVENS
WORLD'S LARGEST HOTEL
CHICAGO

ADVERTISING POWER

Reader attention insures advertising power—They are inseparable.

The Iron Age rates high in reader interest. Its subscription renewal (repeat order) record is high among all large active circulation publications. Another check is what the reader says—In 34 out of 47 reader investigations amounting to around 13,000 opinions—the readers put Iron Age first as the most useful and carefully read industrial publication.

CROSBY *for* STAMPINGS

Serving Industry Since 1896

We have served more than a hundred industries with "Sheet Metal Stampings" during the past forty years, under uninterrupted and progressive management.

We are proud of this record.

Send your next Stamping inquiry to us and get acquainted with Crosby Service.



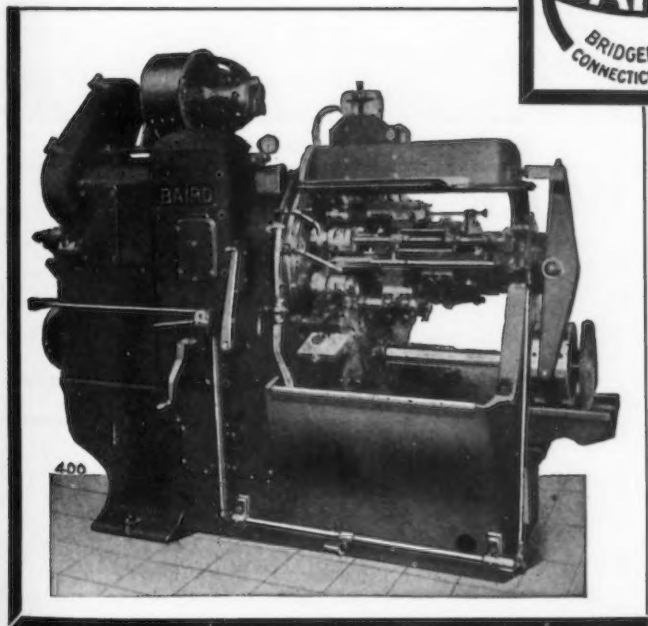
Made from 7/32" Steel

THE CROSBY COMPANY

General Offices and Works: BUFFALO, NEW YORK

Branch Offices: Chicago Detroit Cleveland New York Philadelphia

Fast and Accurate!



In building this Baird 7" Horizontal Automatic Chucking Machine our aim was to produce a machine that would turn out accurate work at a fast rate, and that would stay accurate after a long period of service. Customers tell us our aim too was accurate, as the machines achieved these results.

In addition to high spindle speeds the time for indexing including "air cuts" of the tools is only 2.15 seconds for single indexing. Accuracy of parts machined meets the inspection departments' O.K.

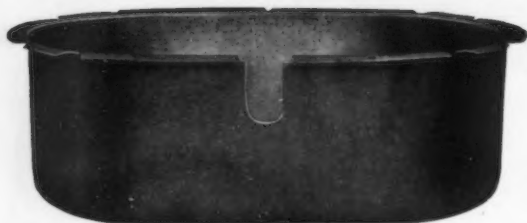
Baird Chucking Machines perform all the usual lathe operations and also drilling, milling slots or oil grooves, inserting bushings, etc. Flexibility in tool setups and in operation makes this machine a decided asset to your machine shop. For quotations or estimates—

"Ask Baird About It"

THE BAIRD MACHINE COMPANY

BRIDGEPORT, CONN.

Why Stamping Users Come to Parish!



MOTOR COVER

There are two kinds of stampings—those easy to make and those that involve difficulties. On the easy jobs our facilities can turn them out like hot cakes at prices attractive to you.

The difficult stamping may require a special alloy steel for proper wear resistance. Or it may involve a question of design with its attending production problems.

Parish is equipped in both laboratory and shop to recommend the right type of alloy steel, assist in design, and put the stamping into production in a way that frequently reduces the number of operations. Parish also provides the correct heat treatment for alloy stampings.

At Parish you get an experienced and complete stamping service at the right price.

PARISH PRESSED STEEL CO., Reading, Pa.

PACIFIC COAST REPRESENTATIVE

F. Somers Peterson Co., 57 California St., San Francisco, Cal.

SPECIAL SCREWS

Made to Order

We manufacture special screws, rivets and studs of quality and precision from all types of material to your specifications.

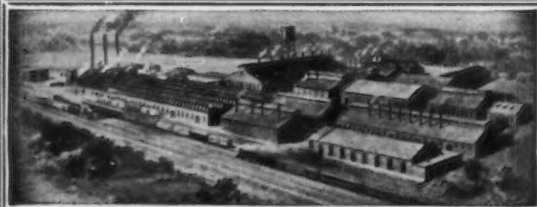
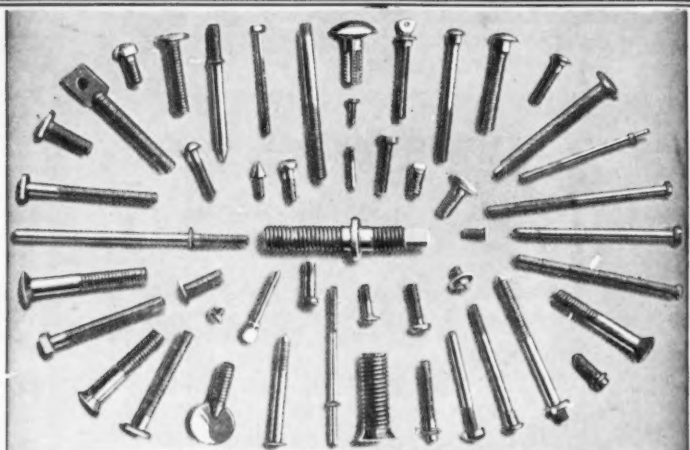
Our cold heading process will beat the prices on milled-from-the-bar products — and answer your purpose equally well.

We manufacture for the most discriminating users. Our specialists are at your disposal. Why not get in touch with us?

The PROGRESSIVE MFG. CO.

TORRINGTON, CONN., U. S. A.

The illustration indicates a few of the many special parts that we have developed for other manufacturers



THE ATHENIA STEEL CO.

135 William Street, New York

Works, Athenia, N. J.

Makers of High Grade Tempered and Polished Steel for Clock, Watch, Motor and Typewriter Springs. Also Wound Springs. Tempered and Untempered Steel for other purposes. Special quality equal to finest imported for finish and accurate rolling. Also Stainless Steels of various grades.

AGENTS:—

Lapham Hickey Co.—3333 W. 47th Place, Chicago, Ill.—414 United Artists Bldg., Detroit, Mich.
E. F. Krause & Co.—430-440 Commercial St., Los Angeles, Calif.
Hill Chase & Co.—Richmond and Ontario Sts., Philadelphia, Pa.
Wetherell Bros. Co.—251 Albany St., Cambridge, Mass.

TRACK SPIKES
BOAT SPIKES
DOCK SPIKES
GUARD SPIKES
TRACK BOLTS

STEEL BARS IRON
DEFORMED REINFORCING

W. AMES & CO.

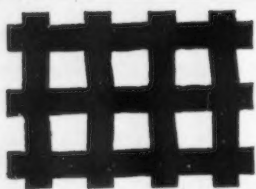
ESTABLISHED 1859

ROLLING MILL
FACTORY

JERSEY CITY, N. J.

WAREHOUSE
OFFICE

MACHINE BOLTS
TIE RODS
WASHERS
SPLICE BARS
RIVETS—NUTS



MICHIGAN WIRE CLOTH CO.

ESTABLISHED 1864

EVERYTHING IN WIRE CLOTH

Pioneers in the manufacture of DOUBLE CRIMP WIRE CLOTH and WIRE SCREENING of every kind possible to weave. Made of Steel, Iron, Brass, Copper, Bronze, Aluminum, German Silver, Pure Nickel, Galvanized, Tinned, Monel, Manganese, Zinc and Stainless Steel; also Wire Lath, etc.
Also drawers of Brass, Copper, Bronze, German Silver, Pure Nickel, Aluminum, Monel Metal, Wire, etc.

2117 HOWARD STREET, DETROIT, MICH.

Write for Catalogue No. 25

"THE BUY"

The Iron Age gives maximum
reader volume at minimum cost

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ABRASIVE WHEELS—See Grinding Wheels

ABRASIVE CLOTH & PAPER
Norton Co., Worcester, Mass.

ABRASIVES—Steel Shot and Grit
American Foundry Equipment Co., The, 401 Byrkit St., Mishawaka, Ind.
Pangborn Corporation, Hagerstown, Md.

ACCUMULATORS—Hydraulic
Baldwin-Southwark Corp., Southwark Div., Philadelphia.
Hydraulic Press Mfg. Co., The, Mt. Gilead, Ohio.

Lake Erie Engineering Corp., 68 Kenmore Sta., Buffalo, N. Y.
Wood, R. D., & Co., Philadelphia.

ACETYLENE—Dissolved in Cylinders & Small Tanks
Air Reduction Sales Co., 60 East 42nd St., N. Y. C.

Linde Air Prods. Co., The, 30 East 42nd St., N. Y. C.

ACIDS—Pickling
American Chemical Paint Co., Ambler, Pa.
Grasselli Chemical Co., Inc., The, Cleve.

AIR CONDITIONING EQUIPMENT
American Blower Corp., 6000 Russell St., Detroit.

Clarage Fan Co., Kalamazoo, Mich.
AIR TANKS AND CYLINDERS
Feafie, William B., & Sons Co., Ptgh.

ALLOYS—Calcium
Electro Metallurgical Sales Corp., 30 East 42nd St., N. Y. C.

ALLOYS—Copper
American Brass Co., The, Waterbury, Conn.
American Radiator Co., 40 W. 40th St., New York City.

ALLOYS—Magnesium
Dow Chemical Co., 921 Jefferson Ave., Midland, Mich.

ALLOYS—Phosphor Bronze
Phosphor Bronze Smelting Co., The, Phila. Riverside (N. J.) Metal Co.

ALLOYS—Titanium
Metal & Thermit Corp., 120 B'way, N. Y. C.

Titanium Alloy Mfg. Co., The, Niagara Falls, N. Y.

ALLOYS—Tungsten
Vanadium Corp. of America, 420 Lexington Ave., N. Y. C.

ALLOYS—Vanadium
Vanadium Corp. of America, 420 Lexington Ave., N. Y. C.

ALUMINUM
Aluminum Co. of America, Pittsburgh.
Seligman, Arthur, & Co., Inc., 30 Rockefeller Plaza, N. Y. C.

AMMETERS AND VOLTMEETERS—Recording
Bristol Co., The, Waterbury, Conn.

AMMONIA RECOVERY PLANTS
Koppers Construction Co., The, Pittsburgh.

ANGLES, BEAMS, CHANNELS AND TEES
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.

Inland Steel Co., Chicago.
Jones & Laughlin Steel Corp., Pittsburgh.

Ryerson, Jos. T., & Son, Inc., Chicago.
Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.

Steel & Tubes, Inc., Cleveland.
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

Weirton (W. Va.) Steel Co.
ANGLES, BEAMS, CHANNELS & TEES—Magnesium Alloys

Dow Chemical Co., 921 Jefferson Ave., Midland, Mich.

ANNEALING—See Heat Treating
ANNEALING BOXES
United Engineering & Fdry. Co., Ptgh.

ANODES—Zinc
Meaker Co., The, Chicago.

ANODES—All Types
Grasselli Chemical Co., Inc., The, Cleve. Seymour (Conn.) Mfg. Co.

Udylite Co., The, Detroit.
ANODES—Cadmium
Grasselli Chemical Co., Inc., The, Cleve. Udylite Co., The, Detroit.

ARBORS
Morse Twist Drill & Mch. Co., New Bedford, Mass.

ARMORING MACHINERY—Cable, Wire, Hose
Sleeper & Hartley, Inc., Worcester, Mass.

ARRESTERS—Spark
Harrington & King Perforating Co., Chi.

AXLES—Car or Locomotive
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

BALANCING EQUIPMENT
Gisholt Machine Co., Madison, Wis.

BALING PRESSES—Scrap—See Presses
—Baling
BALLS—Burnishing
Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.

Hartford (Conn) Steel Ball Co., The.
BALLS—Steel, Brass or Bronze
Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.

Fafnir Bearing Co., New Britain, Conn.
Hartford (Conn) Steel Ball Co., The.
New Departure Mfg. Co., Bristol, Conn.
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.

BANDS—Steel
Acme Steel Co., Chicago.
Bethlehem (Pa.) Steel Company.
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

BANDS—Welded
Amer. Welding & Mfg. Co., Warren, O.

BARRELS—Burnishing
Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.

BARRELS—Plating
Meaker Co., The, Chicago.

BARRELS—Tumbling
Hartford Mch. Co., The, Bridgeport, Conn.
Hartford (Conn) Steel Ball Co., The.

BAR—Alloy
Republic Steel Corp., Cleveland, Ohio.

BAR—Aluminum
Aluminum Co. of America, Pittsburgh.

BAR—Brass, Bronze or Copper
Bunting Brass & Bronze Co., Toledo, Ohio.

BAR—Cold Drawn
American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.

Union Drawn Steel Co., Massillon, Ohio.

BAR—Concrete, Reinforcing
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.

Inland Steel Co., Chicago.
Jones & Laughlin Steel Corp., Pittsburgh.

Laclede Steel Co., St. Louis, Mo.
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

BAR—Magnesium Alloys
Dow Chemical Co., 921 Jefferson Ave., Midland, Mich.

BAR—Steel
Ames, W., & Co., Jersey City, N. J.

Andrews Steel Co., The, Newport, Ky.
Bethlehem (Pa.) Steel Company.

Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Great Lakes Steel Corp., Detroit.
Inland Steel Co., Chicago.

Jones & Laughlin Steel Corp., Pittsburgh.
Republic Steel Corp., Cleveland, Ohio.

Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.
Steel & Tubes, Inc., Cleveland.

Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

Timken Roller Bearing Co., The, Canton, O.
Timken Steel & Tube Co., The, Canton, O.

Weirton (W. Va.) Steel Co.
Youngstown (Ohio) Sheet & Tube Co., The.

BATTERIES—Storage
Edison Storage Battery, Div. of Thomas Edison, Inc., West Orange, N. J.

Electric Storage Battery Co., The, Phila.
Gould Storage Battery Corp., 600-650 Neoga St., Depew, N. Y.

BATTERY CHARGERS
Cutler-Hammer, Inc., Milwaukee.

BEAMS—See Angles, Beams, Channels and Tees

BEARINGS—Ball
Bantam Ball Bearing Co., The, South Bend, Indiana.

Fafnir Bearing Co., New Britain, Conn.
Federal Bearings Co., Inc., The, Poughkeepsie, N. Y.

New Departure Mfg. Co., Bristol, Conn.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.

Schatz Mfg. Co., The, Poughkeepsie, N. Y.

BEARINGS—Brass and Bronze
Ameco Metal, Inc., Milwaukee, Wis.

Bunting Brass & Bronze Co., Toledo, O.
BEARINGS—Oilless
Bunting Brass & Bronze Co., Toledo, O.

Rhoades, R. W., Metalline Co., Inc., Long Island City, N. Y.

Richardson Co., The, Melrose Park, Ill.

BEARINGS—Quill
Bantam Ball Bearing Co., The, South Bend, Indiana.

BEARINGS—Radial
Bantam Ball Bearing Co., The, South Bend, Indiana.

Fafnir Bearing Co., New Britain, Conn.
Federal Bearings Co., Inc., The, Poughkeepsie, N. Y.

Hyatt Roller Bearing Co., Newark, N. J.
New Departure Mfg. Co., Bristol, Conn.

Norma-Hoffmann Bearings Corp., Stamford, Conn.
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.

Shaffer Bearing Corp., Chicago.
Timken Roller Bearing Co., The, Canton, O.

MARSCHKE

formerly Van Dorn, Black & Decker

HEAVY DUTY GRINDERS AND BUFFERS



A Catalog showing machines with 10" to 30" wheels and 1 to 25 H.P. motors will be sent promptly upon request.

An important item accounting for the fact that we are now manufacturing the MARSCHKE HEAVY DUTY GRINDERS and BUFFERS, is our own experience with these machines.

We have been using several different types and sizes of Marschke Grinders and Buffers for so long that "the oldest man" of the organization does not remember when they were originally installed.

Nor does anyone remember when any of these machines has given a bit of trouble and since that is the kind of machines we like to use, it's also the kind we like to make and sell.

You, too, will appreciate the dependable durability of Marschke Grinders and Buffers—formerly made by Van Dorn, Black & Decker—now being manufactured by

VONNEGUT MOULDER CORP.

1307 Madison Avenue

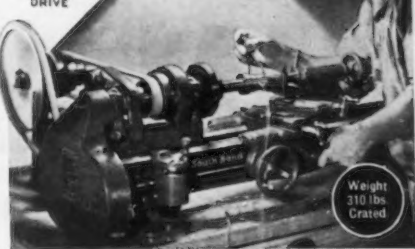
Indianapolis, Ind.

New 1936 Model

SOUTH BEND \$75 LATHE

LESS MOTOR DRIVE

The 9"x3" Workshop Bench Lathe shown here is a precision lathe, with precision lead screw and back gears, capable of handling the finest and most accurate jobs in manufacturing, in the tool room and laboratory. With horizontal Countershaft, 1/2 h.p. reversing motor, switch, \$98.25 and belting as shown



Weight 310 lbs. Crated

Write for new catalog and prices

SOUTH BEND LATHE WORKS

324 E. MADISON ST.

SOUTH BEND, IND., U. S. A.

LUCAS "PRECISION"

Horizontal Boring, Drilling and Milling Machine

THE LUCAS MACHINE TOOL CO.

NOW AND ALWAYS OF

CLEVELAND, OHIO, U. S. A.

SELF-OILING, ALL-GEARED DRILLERS and HYDRAULIC INTERNAL HONERS

Write Today For Catalog I
BARNES DRILL CO.

815 CHESTNUT ST., ROCKFORD, ILL., U. S. A.



Cone 4-Spindle Automatics

Are economical and accurate producers of screw machine parts up to 6" diameter, 7" milling length. They cut costs, increase production, boost profits.

Write for particulars

CONE AUTOMATIC MACHINE CO., Inc.

WINDSOR, VERMONT

REPRESENTATIVES:

Detroit: J. C. Austerberry's Sons, 634 E. Congress St., Detroit, Mich.
Chicago: John H. Glover, 2127 North Sayre Ave., Chicago, Ill.
Ohio: S. B. Martin, 1977 Erie Cliff Drive, Lakewood, Ohio.
New England: Potter & Johnston Machine Co., Pawtucket, R. I.
Indiana: G. A. Richey, Chamber of Commerce Bldg., Indianapolis, Ind.

New York State: Syracuse Supply Co., Syracuse, N. Y.; also Rochester, N. Y.
Pennsylvania: Arch Machinery Co., 1005 Park Bldg., Pittsburgh, Pa.
Philadelphia: Lloyd & Arms, Inc., 133 South 36th St., Phila., Pa.
California: C. F. Bulott Machinery Co., 829-831 Folsom St., San Francisco, Calif.

LELAND-GIFFORD COMPANY

Worcester, Mass.

Drilling Machinery
Belt and Motor Spindle
One to Six Spindles

Tapping Attachments and Multiple Heads

GOSS and DE LEEUW

MULTIPLE SPINDLE

CHUCKING MACHINES

Two, Four, Five Spindles • Work and Tool Rotating Types
GOSS & DE LEEUW MACHINE CO., NEW BRITAIN, CONN.

THE CLASSIFIED SECTIONS

*Have No
Casual Readers*

When people turn to the classified sections of THE IRON AGE, as they do regularly, they mean business. They have something definite in mind and are looking for information. Tell them there what you have to offer in the way of contract manufacturing service, used equipment or business opportunities.

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Timken Roller Bearing Co., The, Canton, O.
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Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.
Shafer Bearing Corp., Chicago.
BEARINGS—Thrust
Bantam Ball Bearing Co., The, South Bend, Indiana.
Pafnir Bearing Co., New Britain, Conn.
Federal Bearings Co., Inc., The, Poughkeepsie, N. Y.
Hyatt Roller Bearing Co., Newark, N. J.
New Departure Mfg. Co., Bristol, Conn.
Norma-Hoffmann Bearings Corp., Stamford, Conn.
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.
Schatz Mfg. Co., The, Poughkeepsie, N. Y.
Shafer Bearing Corp., Chicago.
Timken Roller Bearing Co., The, Canton, O.
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BELT FASTENERS
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Graton & Knight Co., Worcester, Mass.
BELT LACER
Bristol Co., The, Waterbury, Conn.
BELT LACING
Graton & Knight Co., Worcester, Mass.
Rhoads, J. E. & Sons, Philadelphia.
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Graton & Knight Co., Worcester, Mass.
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BELTING CEMENT
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Rhoads, J. E. & Sons, Philadelphia.
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Graton & Knight Co., Worcester, Mass.
Houghton, E. F. & Co., Philadelphia.
Rhoads, J. E. & Sons, Philadelphia.
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Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.
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Goodyear Tire & Rubber Co., Akron, Ohio.
Graton & Knight Co., Worcester, Mass.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.
Robins Conveying Belt Co., 15 Park Row, N. Y. C.
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Graton & Knight Co., Worcester, Mass.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.
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Niagara Machine & Tool Works, Buffalo, N. Y.
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BILLETS—Carbon Steel
Andrews Steel Co., The, Newport, Ky.
BILLETS—Carbon Vanadium Steel
Andrews Steel Co., The, Newport, Ky.
BILLETS—Chrome Nickel Steel
Andrews Steel Co., The, Newport, Ky.
BILLETS—Chrome Steel
Andrews Steel Co., The, Newport, Ky.
BILLETS—Die Block Steel
Andrews Steel Co., The, Newport, Ky.
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Andrews Steel Co., The, Newport, Ky.
Central Iron & Steel Co., Harrisburg, Pa.
Harrisburg (Pa.) Steel Corp.
Midvale Co., The, Nicetown, Phila., Pa.
Republic Steel Corp., Cleveland, Ohio.
BILLETS—Nickel Steel
Andrews Steel Co., The, Newport, Ky.
BILLETS—Re-rolling
Alan Wood Steel Co., Conshohocken, Pa.
Andrews Steel Co., The, Newport, Ky.
BILLETS—Steel
Bethlehem (Pa.) Steel Company.
Continental Steel Corp., Kokomo, Ind.
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.
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Cleveland Steel Tool Co., The, 660 E. 82nd St., Cleveland, Ohio.
BLANKS—Gear and Pinion
Chicago (Ill.) Rawhide Mfg. Co., The, 1306 Elston Ave.
Richardson Co., The, Melrose Park, Ill.

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Clarage Fan Co., Kalamazoo, Mich.
Spencer Turbine Co., Hartford, Conn.
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Welditt Acetylene Co., Detroit.
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HUCKETS—Electric Motor

Erie (Pa.) Steel Construction Co.

Hayward Co., The, 50 Church St., N. Y. C.

BUCKETS—Orange Peel

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Hayward Co., The, 50 Church St., N. Y. C.

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Steelwell Machinery Co., Cleveland.

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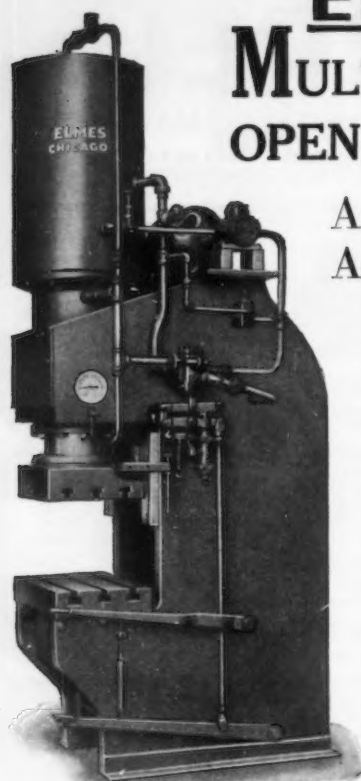
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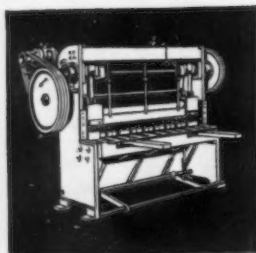
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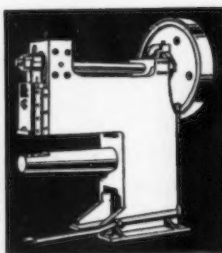
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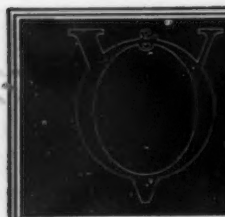
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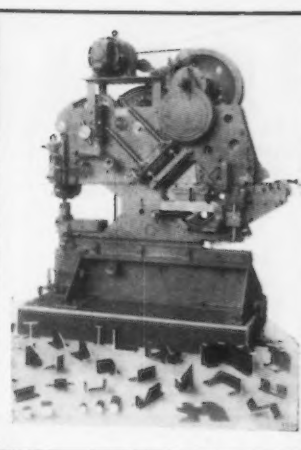
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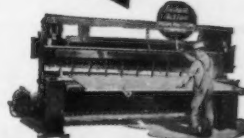


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Interlake Iron Corp., Chicago.

FLOORING—Open Steel

Hendrick Mfg. Co., Carbondale, Pa.

FLOORING—Steel

American Pressed Steel Co., Philadelphia.

FLUX—Welding

Linde Air Prods. Co., The, 30 E. 42nd St., N. Y. C.

FORGING MACHINES—Upset

Acme Machinery Co., Cleveland.

FORGINGS—Alloy Steel

Heppenstall Co., Pittsburgh.

National Forge and Ordnance Co., Irvine, Pa.

FORGINGS—Aluminum

Aluminum Co. of America, Pittsburgh.

FORGINGS—Brass, Bronze or Copper

American Brass Co., The, Waterbury, Conn.

Commonwealth Brass Corp., Detroit.

Revere Copper & Brass, Inc., 230 Park Ave., N. Y. C.

Transue & Williams, Pressed Steel Div., Alliance, Ohio.

FORGINGS—Cold Pressed

Rockford (Ill.) Drop Forge Co.

FORGINGS—Drop, Iron or Steel

Atlas Drop Forge Co., Lansing, Mich.

Canton (Ohio) Drop Forging & Mfg. Co.

Canton (Ohio) Forge & Axle Co.

Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Oliver Iron & Steel Corp., Pittsburgh.

Rockford (Ill.) Drop Forge Co.

Storms Drop Forging Co., Springfield, Mass.

Transue & Williams, Pressed Steel Div., Alliance, Ohio.

Williams, J. H., & Co., Buffalo, N. Y.

FORGINGS—Hollow

Finkl, A., & Sons Co., Chicago.

Harrisburg (Pa.) Steel Corp.

National Forge and Ordnance Co., Irvine, Pa.

FORGINGS—Hollow Bored

American Hollow Boring Co., 1912 Raspberry St., Erie, Pa.

FORGINGS—Hydraulic Press, Iron or Steel

American Hollow Boring Co., 1912 Raspberry St., Erie, Pa.

Atlas Drop Forge Co., Lansing, Mich.

Bethlehem (Pa.) Steel Company.

Finkl, A., & Sons Co., Chicago.

Mesta Mch. Co., Pittsburgh.

Midvale Co., The, Nicetown, Phila., Pa.

National Forge and Ordnance Co., Irvine, Pa.

FORGINGS—Magnesium Alloys

Dow Chemical Co., 921 Jefferson Ave., Midland, Mich.

FORGINGS—Upset

Bethlehem (Pa.) Steel Company.

FURNACE ENGINEERS

Finn & Dreffeln Co., Chicago.

FURNACES—Annealing & Case Harden-

ing

American Gas Furnace Co., Elizabeth, N. J.

FURNACES—Billet or Ingot Heating

Flinn & Dreffeln Co., Chicago.

FURNACES—Electric, Steel Melting

American Bridge Co. (U. S. Steel Corp. Subsidiary), Pittsburgh.

General Electric Co., Schenectady, N. Y.

Pittsburgh (Pa.) Lecomelt Furnace Corp.

FURNACES—Enameling

Carborundum Co., The, Perth Amboy, N. J.

FURNACES—Forging

Holcroft & Co., Detroit.

Machler, Paul, Co., The, Chicago.

FURNACES—Heat Treating, Automatic

Amer. Gas Furnace Co., Elizabeth, N. J.

Holcroft & Co., Detroit.

Rockwell, W. S., Co., 50 Church St., N.Y.C.

FURNACES—Heat Treating, Cyanide or Lead

Chicago (Ill.) Flexible Shaft Co.

FURNACES—Heat Treating, Electric

General Electric Co., Schenectady, N. Y.

Holcroft & Co., Detroit.

Hoskins Mfg. Co., Detroit, Mich.

Rockwell, W. S., Co., 50 Church St., N.Y.C.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

FURNACES—Heat Treating, Oil or Gas

Chicago (Ill.) Flexible Shaft Co.

Holcroft & Co., Detroit.

Rockwell, W. S., Co., 50 Church St., N.Y.C.

FURNACES—Pack Heating Sheets

Aetna-Standard Engineering Co., The, Youngstown, Ohio.

Wean Engineering Co., Inc., The, Warren, Ohio.

FURNACES—Rivet Heating, Electric

General Electric Co., Schenectady, N. Y.

FURNACES—Wire, Annealing and Gal-

vanizing

General Electric Co., Schenectady, N. Y.

GAGE BLOCKS

Ford Motor Co. (Johansson Division), Dearborn, Mich.

GAGES—Dial

Federal Products Corp., Providence, R. I.

Starrett, L. S., Co., Athol, Mass.

GAGES—Electric

Sheffield Gage Corp., The, Dayton, Ohio.

GAGES—Plug and Snap

Pratt & Whitney Co., Hartford, Conn.

Sheffield Gage Corp., The, Dayton, Ohio.

Taft-Pelree Mfg. Co., The, Woonsocket, R. I.

GAGES—Pressure and Vacuum, Recording

Bristol Co., The, Waterbury, Conn.

Brown Instrument Co., The, Philadelphia.

GAGES—Thickness, for Rolling Mills

Federal Products Corp., Providence, R. I.

Haines Gage Co., The, Phila., Pa.

GAGES—Thread Lead

Jones & Lamson Mch. Co., Springfield, Vt.

Pratt & Whitney Co., Hartford, Conn.

Sheffield Gage Corp., The, Dayton, Ohio.

GALVANIZING

American Hot Dip Galvanizers Assn., Inc., Pittsburgh.

Cattle, Joseph P., & Bros., Phila.

GALVANIZING—Electro

Meaker Co., The, Chicago.

GALVANIZING EQUIPMENT—Electro

Meaker Co., The, Chicago.

GALVANIZING EQUIPMENT—Electro—

For Wire

Meaker Co., The, Chicago.

GALVANIZING PLANTS—For Sheets

Aetna-Standard Engineering Co., The, Youngstown, Ohio.

Erie (Pa.) Foundry Co.

GAS FOR INDUSTRIAL USES

American Gas Association, 420 Lexington Ave., N. Y. C.

GAS PRODUCERS

Flinn & Dreffeln Co., Chicago.

Koppers Construction Co., The, Pittsburgh.

Morgan Construction Co., Worcester, Mass.

Wood, R. D., & Co., Philadelphia.

GAS RECOVERY COKE OVENS

Koppers Construction Co., The, Pittsburgh.

GASKETS—Asbestos, Metal or Rubber

Garlock Packing Co., The, Palmyra, N. Y.

GASKETS—Felt

Felters Co., Inc., The, Boston, Mass.

GASKETS—Leather

Graton & Knight Co., Worcester, Mass.

GASKETS—Rubber

American Hard Rubber Co., 11 Mercer St., N. Y. C.

GEAR CHECKING EQUIPMENT

Michigan Tool Co., Detroit, Mich.

GEAR CUTTING

Earle Gear & Machine Co., Phila.

Farrel-Birmingham Co., Inc., Buffalo, N.Y.

Gleason Works, Rochester, N. Y.

James, D. O., Mfg. Co., Chicago.

Philadelphia (Pa.) Gear Works.

Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

GEAR CUTTING MACHINES

Brown & Sharpe Mfg. Co., Prov., R. I.

Farrel-Birmingham Co., Inc., Buffalo, N.Y.

Gleason Works, Rochester, N. Y.

GEAR DRIVES—Herringbone

Lewis Foundry & Mch. Co., Pittsburgh.

United Engineering & Mfr. Co., Pgh.

GEAR LAPPING MACHINES

Michigan Tool Co., Detroit, Mich.

GEAR MOTORS

Allis-Chalmers Mfg. Co., Milwaukee.

James, D. O., Mfg. Co., Chicago.

Reliance Electric & Engrg. Co., Cleveland.

Westinghouse Elec. & Mfg. Co., East Pgh.

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GEAR PLANING MACHINES

Gleason Works, Rochester, N. Y.

GEAR SHAVING MACHINES

Michigan Tool Co., Detroit, Mich.

GEARS—Bevel

Boston Gear Wks., Inc., North Quincy, Mass.

Gleason Works, Rochester, N. Y.

James, D. O., Mfg. Co., Chicago.

Richardson Co., The, Melrose Park, Ill.

GEARS—Heat Treated

Gleason Works, Rochester, N. Y.

James, D. O., Mfg. Co., Chicago.

Simonds Mfg. Co., Pittsburgh.

GEARS—Herringbone

Farrel-Birmingham Co., Inc., Buffalo, N. Y.

Horsburgh & Scott Co., 5112 Hamilton Ave., Cleveland.

James, D. O., Mfg. Co., Chicago.

Mesta Mch. Co., Pittsburgh.

Philadelphia (Pa.) Gear Works.

GEARS—Machine Cut

Boston Gear Wks., Inc., North Quincy, Mass.

Cleveland (Ohio) Worm & Gear Co.

Foots Gear Wks., Inc., 1315 S. Cicero Ave., Cicero, Ill.

Gleason Works, Rochester, N. Y.

James, D. O., Mfg. Co., Chicago.

Simonds Mfg. Co., Pittsburgh.

GEARS—Non-Metallic

Boston Gear Wks., Inc., North Quincy, Mass.

Chicago (Ill.) Rawhide Mfg. Co., The, 1306 Elston Ave.

General Electric Co., Schenectady, N. Y.

James, D. O., Mfg. Co., Chicago.

GEARS—Rawhide

Chicago (Ill.) Rawhide Mfg. Co., The, 1306 Elston Ave.

GEARS—Spur

Boston Gear Wks., Inc., North Quincy, Mass.

James, D. O., Mfg. Co., Chicago.

Philadelphia (Pa.) Gear Works.

Simonds Mfg. Co., Pittsburgh.

GEARS—Worm

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Cleveland (Ohio) Worm & Gear Co.

Horsburgh & Scott Co., 5112 Hamilton Ave., Cleveland.

James, D. O., Mfg. Co., Chicago.

Philadelphia (Pa.) Gear Works.

GENERATORS—Acetylene

Air Reduction Sales Co., 60 East 42nd St., N. Y. C.

Linde Air Prods. Co., The, 30 East 42nd St., N. Y. C.

GENERATORS—Electric

Fairbanks, Morse & Co., Chicago.

Lincoln Electric Co., The, Cleveland.

Reliance Electric & Engng. Co., Cleveland.

Westinghouse Elec. & Mfg. Co., East Pgh.

GENERATORS—Electric, Second Hand.

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GENERATORS—Electroplating

Meeker Co., The, Chicago.

GLOVES—Asbestos & Fireproof

Safety Equipment Service, Co., The, Cleve.

GOGGLES—Safety

American Optical Co., Southbridge, Mass.

Safety Equipment Service, Co., The, Cleve.

GOVERNORS—Air Compressor

Westinghouse Air Brake Co., Industrial Div., Pittsburgh.

GRATING—Flooring, Sidewalk, etc.—See

Flooring—Open Steel

GREASE—Lubricating

Gulf Oil Corp. of Pa., Gulf Refining Co., Pittsburgh.

Penola, Inc., Pittsburgh.

Secony-Vacuum Oil Co., Inc., 26 Broadway, N. Y. C.

Standard Oil Co. (Indiana), Chicago.

Sun Oil Co., Philadelphia.

Tide Water Oil Co., 17 Battery Place, N. Y. C.

GRILLES—Metal Cane

Diamond Mfg. Co., Wyoming, Pa.

GRILLES—Perforated Metal

Erdle Perforating Co., Rochester, N. Y.

Harrington & King Perforated Co., Chicago.

GRINDING AND POLISHING MACHINES

Cincinnati (Ohio) Grinders, Incorporated.

Excelsior Tool & Mch. Co., E. St. Louis, Ill.

Norton Co., Worcester, Mass.

Vonnegut Moulder Corp., 1807 Madison Ave., Indianapolis, Ind.

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Cincinnati (Ohio) Grinders, Incorporated.

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Bryant Chucking Grinder Co., Springfield, Vt.

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GRINDING MACHINES—Cylindrical

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Hutto Machine Division, Carborundum Co., Detroit.

GRINDING MACHINES—Cylindrical

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GRINDING MACHINES—Gear & Worm

Pratt & Whitney Co., Hartford, Conn.

GRINDING MACHINES—Hob

Barber-Colman Co., Rockford, Ill.

GRINDING MACHINES—Internal

Bryant Chucking Grinder Co., Springfield, Vt.

Greenfield (Mass.) Tap & Die Corp.

Heald Mch. Co., Worcester, Mass.

Hutto Machine Division, Carborundum Co., Detroit.

GRINDING MACHINES—Internal Centerless

Heald Mch. Co., Worcester, Mass.

GRINDING MACHINES—Internal Multiple Spindle

Baird Mch. Co., The, Bridgeport, Conn.

GRINDING MACHINES—Portable Electric

Chicago Pneumatic Tool Co., 6 East 44th St., N. Y. C.

GRINDING MACHINES—Portable Flexible Shaft

Strand, N. A., & Co., Chicago.

GRINDING MACHINES—Portable Pneumatic

Buckeye Portable Tool Co., The, Dayton, O.

Chicago Pneumatic Tool Co., 6 East 44th St., N. Y. C.

Ingersoll-Rand Co., 11 Broadway, New York City.

Warner & Swasey Co., The, Cleveland.

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Landis Tool Co., Waynesboro, Pa.

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Vonnegut Moulder Corp., 1807 Madison Ave., Indianapolis, Ind.

Warner & Swasey Co., The, Cleveland.

GRINDING MACHINES—Surface

Abrasive Machine Tool Co., E. Prov., R. I.

Blanchard Machine Co., The, Cambridge, Mass.

Heald Mch. Co., Worcester, Mass.

Norton Co., Worcester, Mass.

Pratt & Whitney Co., Hartford, Conn.

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Landis Tool Co., Waynesboro, Pa.

LeBlond, B. K., Mch. Tool Co., Cincinnati.

Norton Co., Worcester, Mass.

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Cincinnati (Ohio) Grinders, Incorporated.

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Norton Co., Worcester, Mass.

GRINDING MACHINES—Valve

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Bakelite Corp., 247 Park Ave., N. Y. C.

Blanchard Machine Co., The, Cambridge, Mass.

Carborundum Co., The, Niagara Falls, N. Y.

Macklin Co., Jackson, Mich.

Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.

Norton Co., Worcester, Mass.

GRINDING WHEELS—Segment

Blanchard Machine Co., The, Cambridge, Mass.

GRIT—Steel

Pittsburgh (Pa.) Crushed Steel Co.

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HACK SAW MACHINES

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HAMMERS—Drop

Bliss, E. W., Co., Toledo, Ohio.

Chambersburg (Pa.) Engineering Co.

Erie (Pa.) Foundry Co.

Morgan Engineering Co., The, Alliance, O.

HAMMERS—Pneumatic

Chicago Pneumatic Tool Co., 6 East 44th St., N. Y. C.

Ingersoll-Rand Co., 11 Broadway, New York City.

HAMMERS—Power

Chambersburg (Pa.) Engineering Co.

HAMMERS—Rawhide

Chicago (Ill.) Rawhide Mfg. Co., 1306 Elson Ave.

HAMMERS—Steam

Chambersburg (Pa.) Engineering Co.

Erie (Pa.) Foundry Co.

Morgan Engineering Co., The, Alliance, O.

HANGERS—Ball Bearing

Fafnir Bearing Co., New Britain, Conn.

S K F Industries, Inc., Front St. & Erie Ave., Phila., Pa.

HANGERS—Roller Bearing

Byatt Roller Bearing Co., Newark, N. J.

Shaffer Bearing Corp., Chicago.

HARDNESS TESTING MACHINES

Shore Instrument & Mfg. Co., The, Jamaica, L. I., N. Y.

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Central Iron & Steel Co., Harrisburg, Pa.

North Steel Co., Claymont, Del.

HEADS, Steel—Flanged and Dished

Central Iron & Steel Co., Harrisburg, Pa.

HEAT TREATING

Barnes-Gibson-Raymond, Inc., Detroit.

Barnes, Wallace Co., The, Bristol, Conn.

General Machine Wks., York, Pa.

Gibson, Wm. D., Co., Chicago.

Parish Pressed Steel Co., Reading, Pa.

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Houghton, E. F., & Co., Philadelphia.

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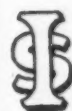
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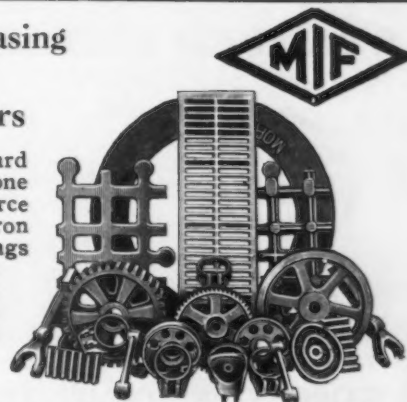
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Detroit (Mich.) Hoist & Mach. Co.
Euclid Crane & Hoist Co., The, Euclid, O.
Harnischfeger Corp., 4401 W. National Ave., Milwaukee, Wis.
Philadelphia (Pa.) Gear Works.
Robbins & Myers, Inc., Springfield, Ohio.
Shaw-Box Crane & Hoist Co., Inc., 402 Broadway, Muskegon, Mich.
Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y.
Wright Mfg. Co., York, Pa.
Yale & Towne Mfg. Co., The, Phila. Div., Phila., Pa.

HOISTS—Electric Traveling

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Euclid Crane & Hoist Co., The, Euclid, O.
Shaw-Box Crane & Hoist Co., Inc., 402 Broadway, Muskegon, Mich.

HOISTS—Monorail

Cleveland Tramrail Div. of The Cleveland Crane & Engng. Co., Wickliffe, Ohio.
Euclid Crane & Hoist Co., The, Euclid, O.
Shaw-Box Crane & Hoist Co., Inc., 402 Broadway, Muskegon, Mich.
Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y.

HONING MACHINES

Barnes Drill Co., Rockford, Ill.

HOSE—Rubber

Goodrich, B. F. Co., The, Akron, Ohio.
Goodyear Tire & Rubber Co., Akron, Ohio.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.

HYDRANTS—Fire

Wood, R. D. & Co., Philadelphia.

HYDRAULIC FEEDS

Vickers, Inc., 1420 Oakman Blvd., Detroit, Mich.

HYDRAULIC MACHINERY

Baldwin-Southwark Corp., Southwark Div., Philadelphia.

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Elmer, Chas. F., Engng. Wks., Chicago.

Hydraulic Press Mfg. Co., The, Mt. Gilead, Ohio.

Lake Erie Engineering Corp., 68 Kanmore Sta., Buffalo, N. Y.

Morgan Engineering Co., The, Alliance, O.

Wood, R. D. & Co., Philadelphia.

INDICATORS—Dial

Federal Products Corp., Providence, R. I.

INGOT MOLDS

Shenango Furnace Co., Pittsburgh.

Shenango-Penn Mold Co., Pittsburgh.

Snyder, W. P. & Co., Pittsburgh.

INGOTS—Aluminum

American Co. of America, Pittsburgh.

Sellman, Arthur, & Co., Inc., 30 Rockefeller Plaza, R. C. A. Bldg., N. Y. C.

INGOTS—Phosphor Bronze

Phosphor Bronze Smelting Co., The, Phila.

INHIBITORS

American Chemical Paint Co., Ambler, Pa.

Grasselli Chemical Co., Inc., The, Cleveland.

INSTRUMENTS—Recording

Bristol Co., The, Waterbury, Conn.

Brown Instrument Co., The, Philadelphia.

IRON—Genuine Open Hearth Iron

Newport (Ky.) Rolling Mill Co., The.

IRON—Rustless

Ludlum Steel Co., Watervliet, N. Y.

JIGS, FIXTURES, DIES, etc. (See Dies, Jigs, Fixtures, etc.)

KEYS—Riveted

Western Wire Prods. Co., St. Louis, Mo.

KEYSATING MACHINES

Baker Bros., Inc., Toledo, Ohio.

Davis Keyseater Co., 490 Exchange St., Rochester, N. Y.

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Chicago (Ill.) Rawhide Mfg. Co., The, 1306 Elston Ave.

LACQUER

Roxall Flexible Lacquer Co., Inc., Elizabeth, New Jersey.

Sherwin-Williams Co., Cleveland.

LADDERS—Safety

Dayton Safety Ladder Co., Cincinnati.

LAMPS—Filament

General Electric Co., Cleveland.

LAMPS—Mercury Vapor

General Electric Vapor Lamp Co., Hoboken, N. J.

LATHES—Automatic

Baird Mch. Co., The, Bridgeport, Conn.

Bullard Co., The, Bridgeport, Conn.

Gisholt Machine Co., Madison, Wis.

Goss & De Leeuw Mch. Co., The, New Britain, Conn.

Jones & Lamson Mch. Co., Springfield, Vt.

LeBlond, R. K., Mch. Tool Co., Cincinnati.

Monarch Mch. Tool Co., The, Sidney, O.

LATHES—Automatic Vertical

Baird Mch. Co., The, Bridgeport, Conn.

Bullard Co., The, Bridgeport, Conn.

Gisholt Machine Co., Madison, Wis.

LATHES—Bench

Hardinge Bros., Inc., Elmira, N. Y.

Pratt & Whitney Co., Hartford, Conn.

South Bend (Ind.) Lathe Works, 595 E. Madison St.

LATHES—Brass

Warner & Swasey Co., The, Cleveland.

LATHES—Chucking

Jones & Lamson Mch. Co., Springfield, Vt.

Warner & Swasey Co., The, Cleveland.

LATHES—Contour Turning

Monarch Mch. Tool Co., The, Sidney, O.

LATHES—Crankshaft

LeBlond, R. K., Mch. Tool Co., Cincinnati.

LATHES—Engine

Hill-Clarke Mchry. Co., 647 W. Washington Blvd., Chicago.

LeBlond, R. K., Mch. Tool Co., Cincinnati.

Monarch Mch. Tool Co., The, Sidney, O.

Pratt & Whitney Co., Hartford, Conn.

South Bend (Ind.) Lathe Works, 595 E. Madison St.

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Lewis Foundry & Mch. Co., Pittsburgh.

Mesta Mch. Co., Pittsburgh.

United Engineering & Fdry. Co., Pgh.

LATHES—Second-Hand. (See Clearing House Section)

LATHES—Toolroom

Monarch Mch. Tool Co., The, Sidney, O.

Pratt & Whitney Co., Hartford, Conn.

LATHES—Turret

Acme Machine Tool Co., Cincinnati.

Bardons & Oliver, Cleveland.

Bullard Co., The, Bridgeport, Conn.

Gisholt Machine Co., Madison, Wis.

Jones & Lamson Mch. Co., Springfield, Vt.

Warner & Swasey Co., The, Cleveland.

LATHES—Turret, Vertical

Bullard Co., The, Bridgeport, Conn.

LEAD—in Oil

Sherwin-Williams Co., Cleveland.

LEATHER—Cup

Chicago (Ill.) Rawhide Mfg. Co., The, 1306 Elston Ave.

LEGGINGS—Safety

Safety Equipment Service Co., The, Clev.

LEVELING MACHINES

Aetna-Standard Engineering Co., The, Youngstown, Ohio.

Wean Engineering Co., Inc., The, Warren, Ohio.

Schatz Mfg. Co., The, Poughkeepsie, N. Y.

LOCK WASHER MACHINERY

Sleeper & Hartley, Inc., Worcester, Mass.

LOCOMOTIVES—Electric

Atlas Car & Mfg. Co., The, Cleveland.

General Electric Co., Schenectady, N. Y.

LOCOMOTIVES—Gasoline

Plymouth (Ohio) Locomotive Works.

LOCOMOTIVES—Industrial

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LOCOMOTIVES—Storage Battery

Atlas Car & Mfg. Co., The, Cleveland.

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Sun Oil Co., Philadelphia.

Texas Company, The, 135 East 42nd St., N. Y. C.

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Sun Oil Co., Philadelphia.

Texas Company, The, 135 East 42nd St., N. Y. C.

Tide Water Oil Co., 17 Battery Pl., N.Y.C.

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Penola, Inc., Pittsburgh.

Socony-Vacuum Oil Co., Inc., 26 Broadway, N. Y. C.

Sun Oil Co., Philadelphia.

Texas Company, The, 135 East 42nd St., N. Y. C.

Tide Water Oil Co., 17 Battery Pl., N.Y.C.

LUBRICANTS—Railroad

Gulf Oil Corp. of Pa., Gulf Refining Co., Pittsburgh.

Penola, Inc., Pittsburgh.

Socony-Vacuum Oil Co., Inc., 26 Broadway, N. Y. C.

Sun Oil Co., Philadelphia.

Texas Company, The, 135 East 42nd St., N. Y. C.

Tide Water Oil Co., 17 Battery Place, N. Y. C.

LUBRICANTS—Roll Neck—Anti-Friction & Plain

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Midland, Mich.

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Ohio Electric Mfg. Co., The, 5908 Maurice
Ave., Cleveland.

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1306 Elston Ave.

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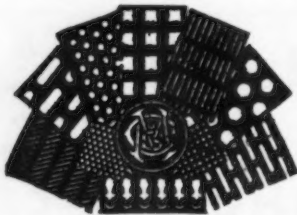
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Chicago Pneumatic Tool Co., 6 East 44th St., N. Y. C.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Worthington Pump & Mchry. Corp., Harrison, New Jersey.

PUNCHES & DIES
Cleveland Steel Tool Co., The, 600 E. 82d St., Cleveland, Ohio.

PUNCHING AND SHEARING MACHINES
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Bertsch & Co., Cambridge City, Ind.
Cincinnati (Ohio) Shaper Co., The.
Excelator Tool & Mach. Co., E. St. Louis, Ill.
G. D. S. Shearing & Punching Machine Co., 101 Walker St., N. Y. C.
Niagara Machine & Tool Works, Buffalo, N. Y.

Pels, Henry, & Co., Inc., 90 West St., N. Y. C.
Schatz Mfg. Co., The, Poughkeepsie, N. Y.
Thomas Spacing Mach. Co., Pittsburgh.

PYROMETERS—Indicating
Bristol Co., The, Waterbury, Conn.
Brown Instrument Co., The, Philadelphia.
Hoskins Mfg. Co., Detroit, Mich.

RAIL SPLICE BARS
Ames, W., & Co., Jersey City, N. J.

RAILS
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.
Foster, L. B., Co., Inc., Pittsburgh.
Frank, M. K., 480 Lexington Ave., N. Y. C.
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

RAILS—Relaying
Hyman-Michaels Co., Chicago.
Sherwood, E. C., 7 Dey St., N. Y. C.

RAILWAY EQUIPMENT & SUPPLIES
Fairbanks, Morse & Co., Chicago.

REAMERS
Cleveland (Ohio) Twist Drill Co., The.
Gammons-Holman Co., Manchester, Conn.
Greenfield (Mass.) Tap & Die Corp.
Morris Twist Drill & Mch. Co., New Bedford, Mass.
Pratt & Whitney Co., Hartford, Conn.

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Gammons-Holman Co., Manchester, Conn.

REAMERS—Helical Taper Pin
Gammons-Holman Co., Manchester, Conn.

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Blanchard Machine Co., The, Cambridge, Mass.

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Littell, F. J., Mch. Co., Chicago.

REFRACTORIES
Cleveland (Ohio) Quarries Co., The.
Great Lakes Foundry Sand Co., Detroit.
Illinois Clay Products Co., Joliet, Ill.

REGULATORS—Compressed Gas
Air Reduction Sales Co., 60 East 42nd St., N. Y. C.
Linde Air Prods. Co., The, 30 East 42nd St., N. Y. C.

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Pittsburgh (Pa.) Steel Co.
Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.

RINGS—Iron or Steel
Midvale Co., The, Nicetown, Phila., Pa.

RINGS—Welded
American Welding & Mfg. Co., Warren, O.

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Acme Machinery Co., Cleveland.
Manville, E. J., Mch. Co., Waterbury, Ct.

RIVET SETS
Cleveland Steel Tool Co., The, 600 E. 82d St., Cleveland, Ohio.

RIVETING MACHINES
Hannifin Mfg. Co., Chicago.
Shuster, F. B., Co., The, New Haven, Ct.

RIVETS
Blake & Johnson Co., The, Waterville, Ct.
Clark Bros. Bolt Co., Milldale, Conn.
Hessell, John, Inc., Clay & Oakland Sts., Bklyn., N. Y.
Oliver Iron & Steel Corp., Pittsburgh.
Progressive Mfg. Co., Torrington, Conn.
Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.

RODS—Aluminum
Aluminum Co. of America, Pittsburgh.

RODS—Brass
American Brass Co., The, Waterbury, Conn.
Revere Copper & Brass, Inc., 230 Park Ave., N. Y. C.

RODS—Magnesium Alloys
Dow Chemical Co., 921 Jefferson Ave., Midland, Mich.

RODS—Nickel Silver
American Brass Co., The, Waterbury, Conn.
Riverside (N. J.) Metal Co.
Seymour (Conn.) Mfg. Co.

RODS—Phosphor Bronze
American Brass Co., The, Waterbury, Conn.
Phosphor Bronze Smelting Co., The, Phila.
Revere Copper & Brass, Inc., 230 Park Ave., N. Y. C.

RODS—Welding
Riverside (N. J.) Metal Co.
Seymour (Conn.) Mfg. Co.

RODS—Welding
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American Brass Co., The, Waterbury, Conn.
American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.
Lincoln Electric Co., The, Cleveland.
Linde Air Prods. Co., The, 30 East 42nd St., N. Y. C.
Metal & Thermit Corp., 120 B'way, N. Y. C.
Pittsburgh (Pa.) Steel Co.
Revere Copper & Brass, Inc., 230 Park Ave., N. Y. C.
Una Welding, Inc., Cleveland, Ohio.

RODS—Wire
American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.
Continental Steel Corp., Kokomo, Ind.
Jones & Laughlin Steel Corp., Pittsburgh.
Pittsburgh (Pa.) Steel Co.
Wickwire Brothers, Cortland, N. Y.
Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.
Youngstown (Ohio) Sheet & Tube Co., The.

ROLLING MACHINERY—Cold Rolling
Bliss, E. W., Co., Toledo, Ohio.
Lewis Foundry & Mch. Co., Pittsburgh.
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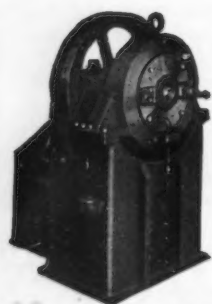
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United Engineering & Fdry. Co., Pith.

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Cincinnati (Ohio) Shaper Co., The.
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Mesta Mch. Co., Pittsburgh.
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Pels, Henry & Co., Inc., 90 West St., N.Y.C.
Schatz Mfg. Co., The, Poughkeepsie, N. Y.
United Engineering & Fdry. Co., Pith.

SHEARING MACHINES — Sheet and

Plate
Beatty Mch. & Mfg. Co., 936—15th St.,
Hammond, Ind.
Cincinnati (Ohio) Shaper Co., The.
Dreis & Krump Mfg. Co., Chicago.
Niagara Mach. & Tool Wks., Buffalo, N. Y.

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Cincinnati (Ohio) Shaper Co., The.
Dreis & Krump Co., Chicago.
Niagara Mach. & Tool Wks., Buffalo, N.Y.

SHEARS—Hand for Sheet Metal

Bremil Mfg. Co., Erie, Pa.

SHEET BARS

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V & O Press Co., Hudson, N. Y.

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Berger Mfg. Co., The, Canton, Ohio.

SHEETS—Aluminum

Aluminum Co. of America, Pittsburgh.

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American Rolling Mill Co., Middletown, O.
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Empire Sheet & Tin Plate Co., Mans-
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American Rolling Mill Co., Middletown, O.
Carnegie-Illinois Steel Corp. (U. S. Steel
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cago.
Columbia Steel Co. (U. S. Steel Corp.
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Continental Steel Corp., Kokomo, Ind.
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Ingersoll Steel & Disc Co., Chicago.
Inland Steel Co., Chicago.
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Scully Steel Products Co. (U. S. Steel
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Superior Sheet Steel Co., Canton, Ohio.
Tennessee Coal, Iron & Railroad Co.
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Weirton (W. Va.) Steel Co.

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Alan Wood Steel Co., Conshohocken, Pa.
American Rolling Mill Co., Middletown, O.
Carnegie-Illinois Steel Corp. (U. S. Steel
Corp. Subsidiary), Pittsburgh & Chi-
cago.

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Granite City (Ill.) Steel Co.
Great Lakes Steel Corp., Detroit.

Newport (Ky.) Rolling Mill Co., The.
Ryerson, Jos. T. & Son, Inc., Chicago.
Superior Sheet Steel Co., Canton, Ohio.
Weirton (W. Va.) Steel Co.
Worth Steel Co., Claymont, Del.

SHEETS—Brass, Bronze, Copper, Nickel,
Silver or Phosphor Bronze
American Brass Co., The, Waterbury, Conn.
Phosphor Bronze Smelting Co., The, Phila.
Revere Copper & Brass, Inc., 230 Park
Ave., N. Y. C.

Riverside (N. J.) Metal Co.
Smyour (Conn.) Mfg. Co.

SHEETS—Chrome

Carnegie-Illinois Steel Corp. (U. S. Steel
Corp. Subsidiary), Pittsburgh & Chi-
cago.

SHEETS—Chrome Nickel

Carnegie-Illinois Steel Corp. (U. S. Steel
Corp. Subsidiary), Pittsburgh & Chi-
cago.

SHEETS—Cold Rolled

American Rolling Mill Co., Middletown, O.
Carnegie-Illinois Steel Corp. (U. S. Steel
Corp. Subsidiary), Pittsburgh & Chi-
cago.

Continental Steel Corp., Kokomo, Ind.
Empire Sheet & Tin Plate Co., Mans-
field, Ohio.
Great Lakes Steel Corp., Detroit.

Inland Steel Co., Chicago.
Republic Steel Corp., Cleveland, Ohio.
Weirton (W. Va.) Steel Co.

SHEETS—Copper Alloy

American Brass Co., The, Waterbury, Conn.
American Radiator Co., 40 W. 40th St.,
New York City.

SHEETS—Copper Steel

Carnegie-Illinois Steel Corp. (U. S. Steel
Corp. Subsidiary), Pittsburgh & Chi-
cago.
Newport (Ky.) Rolling Mill Co., The.
Superior Sheet Steel Co., Canton, Ohio.

SHEETS—Electrical

American Rolling Mill Co., Middletown, O.
Carnegie-Illinois Steel Corp. (U. S. Steel
Corp. Subsidiary), Pittsburgh & Chi-
cago.

Empire Sheet & Tin Plate Co., Mans-
field, Ohio.
Newport (Ky.) Rolling Mill Co., The.
Republic Steel Corp., Cleveland, Ohio.

SHEETS—Enameling

American Rolling Mill Co., Middletown, O.
Carnegie-Illinois Steel Corp. (U. S. Steel
Corp. Subsidiary), Pittsburgh & Chi-
cago.

Columbia Steel Co. (U. S. Steel Corp.
Subsidiary), San Francisco, Calif.
Empire Sheet & Tin Plate Co., Mans-
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Great Lakes Steel Corp., Detroit.
Inland Steel Co., Chicago.
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American Rolling Mill Co., Middletown, O.
Carnegie-Illinois Steel Corp. (U. S. Steel
Corp. Subsidiary), Pittsburgh & Chi-
cago.

Empire Sheet & Tin Plate Co., Mans-
field, Ohio.
Newport (Ky.) Rolling Mill Co., The.
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Ryerson, Jos. T. & Son, Inc., Chicago.
Superior Sheet Steel Co., Canton, Ohio.
Worth Steel Co., Claymont, Del.

SHEETS—Full Finished

Carnegie-Illinois Steel Corp. (U. S. Steel
Corp. Subsidiary), Pittsburgh & Chi-
cago.

Empire Sheet & Tin Plate Co., Mans-
field, Ohio.
Newport (Ky.) Rolling Mill Co., The.
Republic Steel Corp., Cleveland, Ohio.

Youngstown (Ohio) Sheet & Tube Co., The.
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gated

American Rolling Mill Co., Middletown, O.
Bethlehem (Pa.) Steel Company.
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cago.

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Inland Steel Co., Chicago.
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Republic Steel Corp., Cleveland, Ohio.
Scully Steel Products Co. (U. S. Steel
Corp. Subsidiary), Chicago.

Superior Sheet Steel Co., Canton, Ohio.
Tennessee Coal, Iron & Railroad Co.
(U. S. Steel Corp. Subsidiary), Birming-
ham, Ala.
Weirton (W. Va.) Steel Co.

SHEETS—Long Terme

Carnegie-Illinois Steel Corp. (U. S. Steel
Corp. Subsidiary), Pittsburgh & Chi-
cago.

Newport (Ky.) Rolling Mill Co., The.
Superior Sheet Steel Co., Canton, Ohio.
Weirton (W. Va.) Steel Co.

SHEETS—Magnesium Alloys

Dow Chemical Co., 921 Jefferson Ave.,
Midland, Mich.

SHEETS—Metal Furniture

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Republic Steel Corp., Cleveland, Ohio.

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Newport (Ky.) Rolling Mill Co., The.
Superior Sheet Steel Co., Canton, Ohio.

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Carnegie-Illinois Steel Corp. (U. S. Steel
Corp. Subsidiary), Pittsburgh & Chi-
cago.

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field, Ohio.
Newport (Ky.) Rolling Mill Co., The.
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Berger Mfg. Co., The, Canton, Ohio.

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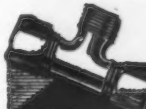
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Wood, R. D., & Co., Philadelphia.

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Ex-Cell-O Aircraft & Tool Corp., 1200 Oakman Blvd., Detroit.

SPINDLES—Hollow Bored
American Hollow Boring Co., 1912 Raspberry St., Erie, Pa.

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Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.

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Noble & Westbrook Mfg. Co., The, East Hartford, Ct.

STAPLES—Wire
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Wickwire Brothers, Cortland, N. Y.

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Durlon Co., Inc., The, 438 N. Findlay St., Dayton, Ohio.

STEEL—Alloy
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Andrews Steel Co., The, Newport, Ky.
Bethlehem (Pa.) Steel Company.
Bissett Steel Co., The, Cleveland.
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Ludlum Steel Co., Watervliet, N. Y.
Republic Steel Corp., Cleveland, Ohio.
Ryerson, Jos. T., & Son, Inc., Chicago.
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.
Timken Roller Bearing Co., The, Canton, Ohio.
Timken Steel & Tube Co., The, Canton, Ohio.
Vanadium-Alloys Steel Co., Latrobe, Pa.
Wheelock, Lovejoy & Co., Inc., Cambridge, Mass.

STEEL—Alloy, Cold Drawn
Bliss & Laughlin, Inc., Harvey, Ill.
Union Drawn Steel Co., Massillon, Ohio.
Wheelock, Lovejoy & Co., Inc., Cambridge, Mass.

STEEL—Bright Finished
Wyckoff Drawn Steel Co., Pittsburgh, Pa.
Union Drawn Steel Co., Massillon, Ohio.

STEEL—Carbon
Andrews Steel Co., The, Newport, Ky.
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.
Harrisburg (Pa.) Steel Corp.
Ingersoll Steel & Disc Co., Chicago.
Latrobe (Pa.) Electric Steel Co.

STEEL—Carbon Vanadium
Andrews Steel Co., The, Newport, Ky.
Latrobe (Pa.) Electric Steel Co.

STEEL—Chrome
Andrews Steel Co., The, Newport, Ky.
Carpenter Steel Co., The, 121 W. Bern St., Reading, Pa.
Latrobe (Pa.) Electric Steel Co.

STEEL—Chrome Manganese
Latrobe (Pa.) Electric Steel Co.

STEEL—Chrome Nickel
Andrews Steel Co., The, Newport, Ky.
Harrisburg (Pa.) Steel Corp.
Latrobe (Pa.) Electric Steel Co.

STEEL—Chrome Nickel Silver
Ingersoll Steel & Disc Co., Chicago.

STEEL—Chrome Vanadium
Andrews Steel Co., The, Newport, Ky.
Harrisburg (Pa.) Steel Corp.
Latrobe (Pa.) Electric Steel Co.

STEEL—Cold Drawn
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Jones & Laughlin Steel Corp., Pittsburgh, Latrobe (Pa.) Electric Steel Co.
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Ryerson, Joseph T., & Son, Inc., Chicago.
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Athena Steel Co., 135 William St., N. Y.
Griffin Mfg. Co., Erie, Pa.
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Republic Steel Corp., Cleveland, Ohio.
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Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.
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Steel & Tubes, Inc., Cleveland.
Superior Steel Corp., Grant Bldg., Pgh.
Thomas Steel Co., The, Warren, Ohio.
Weirton (W. Va.) Steel Co.
Wetherill Bros. Co., Cambridge, 39, Mass.

STEEL—Cold Rolled Strips, Electric Copper Coated
Thomas Steel Co., The, Warren, Ohio.

STEEL—Cold Rolled Strips, Electro-Galvanized
Thomas Steel Co., The, Warren, Ohio.

STEEL—Cold Rolled Strips, Electro Tin Coated
Thomas Steel Co., The, Warren, Ohio.

STEEL—Cold Rolled Strips, Stainless
Acme Steel Co., Chicago.
Griffin Mfg. Co., Erie, Pa.

STEEL—Corrosion Resisting
Carpenter Steel Co., The, 121 W. Bern St., Reading, Pa.
Midvale Co., The, Nicetown, Phila., Pa.

STEEL—Crucible
Vanadium-Alloys Steel Co., Latrobe, Pa.

STEEL—Cutlery
Carpenter Steel Co., The, 121 W. Bern St., Reading, Pa.
Latrobe (Pa.) Electric Steel Co.
Ludlum Steel Co., Watervliet, N. Y.

STEEL—Die
Andrews Steel Co., The, Newport, Ky.
Carpenter Steel Co., The, 121 W. Bern St., Reading, Pa.
Diston, Henry, & Sons, Inc., Philadelphia
Finkl, A., & Sons Co., Chicago.
Jesop, Wm., & Sons, Inc., 121 Varick St., N. Y. C.
Latrobe (Pa.) Electric Steel Co.
Ludlum Steel Co., Watervliet, N. Y.
Milne, A., & Co., 745 Washington St., N. Y. C.

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 Ludlum Steel Co., Watervliet, N. Y.
 Milne, A., & Co., 745 Washington St., N. Y. C.

STEEL—Electric
 Carpenter Steel Co., The, 121 W. Bern St., Reading, Pa.
 Diston, Henry & Sons, Inc., Philadelphia.
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 Timken Steel & Tube Co., The, Canton, O.
 Wheelock, Lovejoy & Co., Inc., Cambridge, Mass.

STEEL—High Speed
 Bethlehem (Pa.) Steel Company.
 Carpenter Steel Co., The, 121 W. Bern St., Reading, Pa.
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 Latrobe (Pa.) Electric Steel Co.
 Ludlum Steel Co., Watervliet, N. Y.
 Milne, A., & Co., 745 Washington St., N. Y. C.
 Vanadium-Alloys Steel Co., Latrobe, Pa.

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 Allegheny Steel Co., West Leechburg Div., Brackenridge, Pa.
 Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.
 Great Lakes Steel Corp., Detroit.
 Inland Steel Co., Chicago.
 Laclede Steel Co., St. Louis, Mo.
 Latrobe (Pa.) Electric Steel Co.
 Republic Steel Corp., Cleveland, Ohio.
 Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.
 Stanley Works, The, New Britain, Conn.; Bridgeport, Conn.
 Steel & Tubes, Inc., Cleveland.
 Superior Steel Corp., Grant Bldg., Pgh. Weirton (W. Va.) Steel Co.

STEEL—Hot Rolled Strips, Electro Zinc Coated
 Thomas Steel Co., The, Warren, Ohio.

STEEL—Hot Rolled Strips, Galvanized
 Acme Steel Co., Chicago.

STEEL—Nickel
 Carpenter Steel Co., The, 121 W. Bern St., Reading, Pa.
 Latrobe (Pa.) Electric Steel Co.

STEEL—Open Hearth
 Andrews Steel Co., The, Newport, Ky.
 Pittsburgh (Pa.) Steel Co.
 Timken Roller Bearing Co., The, Canton, O.
 Timken Steel & Tube Co., The, Canton, O.

STEEL—Rustless
 Acme Steel Co., Chicago.
 Carpenter Steel Co., The, 121 W. Bern St., Reading, Pa.
 Griffin Mfg. Co., Erie, Pa.
 Latrobe (Pa.) Electric Steel Co.
 Ludlum Steel Co., Watervliet, N. Y.

STEEL—Screw
 Bliss & Laughlin, Inc., Harvey, Ill.
 Timken Roller Bearing Co., The, Canton, O.
 Union Drawn Steel Co., Massillon, Ohio.
 Wyckoff Drawn Steel Co., Pittsburgh, Pa.

STEEL—Special Analysis
 Allegheny Steel Co., West Leechburg Div., Brackenridge, Pa.
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 Harrisburg (Pa.) Steel Corp.
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STEEL—Spring
 Athena Steel Co., 135 William St., N. Y.
 Barnes-Gibson-Raymond, Inc., Detroit.
 Barnes, Wallace, Co., The, Bristol, Conn.
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 Great Lakes Steel Corp., Detroit.
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STEEL—Stainless
 Acme Steel Co., Chicago.
 American Rolling Mill Co., Middletown, O.
 Bethlehem (Pa.) Steel Company.
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 Carpenter Steel Co., The, 121 W. Bern St., Reading, Pa.
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 Republic Steel Corp., Cleveland, Ohio.
 Ryerson, Jos. T. & Son, Inc., Chicago.
 Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.
 Union Drawn Steel Co., Massillon, Ohio.
 Wetherill Bros. Co., Cambridge, 39, Mass.

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 Ingersoll Steel & Disc Co., Chicago.

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 Bethlehem (Pa.) Steel Company.
 Bisset Steel Co., The, Cleveland.
 Carpenter Steel Co., The, 121 W. Bern St., Reading, Pa.
 Diston, Henry & Sons, Inc., Philadelphia.
 Ingersoll Steel & Disc Co., Chicago.
 Jessop, Wm., & Sons, Inc., 121 Varick St., N. Y. C.
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 Vanadium-Alloys Steel Co., Latrobe, Pa.
 Wheelock, Lovejoy & Co., Inc., Cambridge, Mass.

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TANKS—Lead Lined
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 Cleveland (Ohio) Quarries Co., The.
 Goodrich, B. F. Co., The, Akron, Ohio.
 Goodyear Tire & Rubber Co., Akron, Ohio.
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 Nukem Products Corp., 68 Niagara St., Buffalo, N. Y.

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 Goodyear Tire & Rubber Co., Akron, Ohio.
 Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.

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 Scaife, Wm. B., & Sons Co., Pittsburgh.

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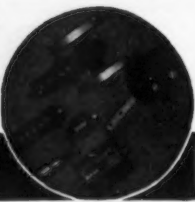

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All Sizes
Finishes
STEEL

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Norton Co., Worcester, Mass.
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Pittsburgh (Pa.) Steel Co.
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American Radiator Co., 40 W. 40th St., New York City.
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TUBES—Nickel Silver
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Central Iron & Steel Co., Harrisburg, Pa.

WASHERS—Leather
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Eaton Mfg. Co., Massillon, Ohio.
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lyn, N. Y.

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Positive Lock Washer Co., The, Newark,
N. J.

**Spring Washer Industry, 618 Wrigley
Bldg., Chicago, Ill.**
Washburn Co., The, Worcester, Mass.

WASHERS—Spring
American Nut & Bolt Fastener Co., Pitts-
burgh.

Beall Tool Co., East Alton, Ill.
Butcher & Hart Mfg. Co., Toledo, Ohio.

Eaton Mfg. Co., Massillon, Ohio.
Hobbs Mfg. Co., Worcester, Mass.

**National Lock Washer Co., The, Newark,
N. J., and Milwaukee, Wis.**
Philadelphia Steel & Wire Corp., Ger-
mantown, Philadelphia, Pa.

**Positive Lock Washer Co., The, Newark,
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WELDING CONTACTORS
Clark Controller Co., The, Cleveland.

**WELDING AND CUTTING MACHINES
AND EQUIPMENT—Oxy-Acetylene**
Air Reduction Sales Co., 60 East 42nd
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WELDING FIXTURES
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**Harnischfeger Corp., 4401 W. National
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Mass.**
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Mass.

WELDING MACHINES—Spot
Swift Electric Welder Co., Detroit.

**Thomson-Gibb Elec. Welding Co., Lynn,
Mass.**
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Corp. Subsidiary), Pittsburgh & Chi-
cago.

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**Michigan Wire Cloth Co., 2117 Howard
St., Detroit.**
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**Revere Copper & Brass, Inc., 230 Park
Ave., N. Y. C.**
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Seymour (Conn.) Mfg. Co.

**WIRE—Flat, Round, Square or Special
Shapes**
American Steel & Wire Co. (U. S. Steel
Corp. Subsidiary), Chicago.

Barnes, Wallace Co., The, Bristol, Conn.
Continental Steel Corp., Kokomo, Ind.

Page Steel & Wire Co., Monessen, Pa.
Roebbing's, John A., Sons Co., Trenton,
N. J.

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Wickwire Bros., Cortland, N. Y.

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St., N. Y. C.**
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Corp. Subsidiary), Chicago.

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Roebbing's, John A., Sons Co., Trenton, N. J.

WIRE, Netting
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Roebbing's, John A., Sons Co., Trenton, N. J.
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Frantiss, Geo. W., & Co., Holyoke, Mass.

Webb Wire Works, New Brunswick, N. J.
Wickwire Spencer Steel Co., 41 East 42nd
St., N. Y. C.

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Bathbone, A. B. & J., Palmer, Mass.

WIRE—Spring
American Steel & Wire Co. (U. S. Steel
Corp. Subsidiary), Chicago.

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Subsidiary), San Francisco, Calif.

**Jones & Laughlin Steel Corp., Pittsburgh,
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Prentiss, Geo. W., & Co., Holyoke, Mass.

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Seneca Wire & Mfg. Co., The, Fostoria,
Ohio.

WIRE—Spring (Music)
Webb Wire Works, New Brunswick, N. J.

WIRE—Stainless Steel
Page Steel & Wire Co., Monessen, Pa.

**Wickwire Spencer Steel Co., 41 East 42nd
St., N. Y. C.**
WIRE—Steel
Wickwire Brothers, Cortland, N. Y.

WIRE—Welding
Air Reduction Sales Co., 60 East 42nd
St., N. Y. C.

**American Steel & Wire Co. (U. S. Steel
Corp. Subsidiary), Chicago.**
Lincoln Electric Co., The, Cleveland.

**Maurath, Inc., 7400 Union Ave., Cleveland,
Metal & Thermit Corp., 120 B'way,
N. Y. C.**
Page Steel & Wire Co., Monessen, Pa.

Pittsburgh (Pa.) Steel Co.
Revere Copper & Brass, Inc., 230 Park
Ave., N. Y. C.

Roebbing's, John A., Sons Co., Trenton, N. J.
Seneca Wire & Mfg. Co., The, Fostoria,
Ohio.

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Wickwire Brothers, Cortland, N. Y.

**Wickwire Spencer Steel Co., 41 East 42nd
St., N. Y. C.**
WIRE—Zinc
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**Michigan Wire Cloth Co., 2117 Howard
St., Detroit, Mich.**
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Nilson, A. H., Mch. Co., Bridgeport, Ct.

Sleeper & Hartley, Inc., Worcester, Mass.
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Morgan Construction Co., Worcester, Mass.

Sleeper & Hartley, Inc., Worcester, Mass.
Waterbury (Ct.) Farrel Fdry. & Mch. Co.

WIRE HAIL MACHINERY
Sleeper & Hartley, Inc., Worcester, Mass.

WIRE PRODUCTS
American Spring & Mfg. Corp., Holly,
Mich.

**American Steel & Wire Co. (U. S. Steel
Corp. Subsidiary), Chicago.**
Buffalo (N. Y.) Wire Wks. Co., Inc.

Eastern Tool & Mfg. Co., Bloomfield, N. J.
Hindley Mfg. Co., Valley Falls, R. I.

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U. S. Steel Wire Spring Co., Cleveland, O.

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Wickwire Spencer Steel Co., 41 East 42nd
St., N. Y. C.

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Corp. Subsidiary), Chicago.

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Mo.

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Wickwire Spencer Steel Co., 41 East 42nd
St., N. Y. C.

WIRE ROPE FITTINGS
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TING MACHINERY—Automatic**
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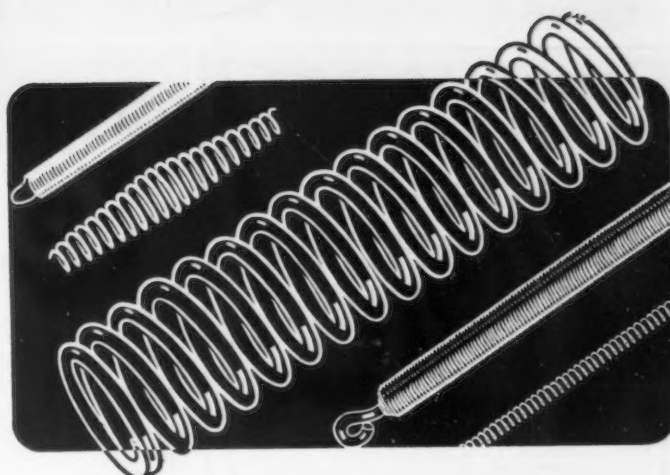
WRENCHES
Armstrong Bros. Tool Co., Chicago.

Williams, J. H., & Co., Buffalo, N. Y.
WRENCHES—Pipe
Greenfield (Mass.) Tap & Die Corp.

WRENCHES—Pneumatic
Ingersoll-Rand Co., 11 Broadway, N. Y. C.

ZINC—Strip
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Gisholt Simplicatic, m.d.
No. 6C Potter & Johnston Automatic, m.d.
Nos. 5A, 6A, 7A Potter & Johnston Automatics
2 1/2"x24", 3"x36" Jones & Lamson Turret, bar equip.
3"x36" Jones & Lamson, chucking
3"x36" 2 spindle Jones & Lamson, chucking
21", 24" Gisholt Turret
Nos. 23, 24 New Britain Automatic
2 1/4" Acme, bar equipment
2 1/4" Acme, chucking equipment
Nos. 9, 12 LeBlond MultiCut
1 1/2" Gridley 4 spindle Automatic
1 1/2"x18" Pratt & Whitney Turret
1 1/2" cap. Dresser Turret, bar equipment
21"x10" LeBlond Mfg. Lathe
LeBlond Crankshaft Lathe, m.d.
3 1/2"x60" Lo Swing Lathe, geared head
9x24" Sundstrand Mfg. Lathe
16"x8" American Geared Head Mfg. Lathe
20"x8" American Cone Head Mfg. Lathe

BORING MILLS

No. 0 Giddings & Lewis Hor. Boring Mill, 3 1/2" bar
No. 40 Landis Horizontal Boring Mill, 4" bar
24" Bullard New Era
30", 36" Gisholt
36" Colburn
37" Niles
40" King
36", 42" Bullard Rapid Production
60" Baush

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12x36" Cincinnati Universal, 3 motor drive
Nos. 2, 3A Cincinnati Universal
No. 1 1/2 Landis Universal
No. 3 Brown & Sharpe Universal
No. 4 Landis Universal
No. Oesterlein Tool & Cutter
No. 1 Norton Tool & Cutter
No. 1 1/2 Cincinnati Tool & Cutter
Nos. 2, 3 Brown & Sharpe Automatic Surface
10" Pratt & Whitney Hydraulic Gear Grinder, 3
motor drive, latest type, for spur and helical gears
Nos. 31, 41 Oliver Drill Grinder, motor in base
No. 25 Heald Rotary Surface Grinder, m.d., hyd. feed
14" Pratt & Whitney Vertical Surface Grinder
No. 78 Wilmarth & Morman Auto. Surface
18x48" Diamond Light Duty Face
No. 72A3 Heald Duplex Sizing Machine m.d.
Nos. 70, 75 Heald Internal
6x18", 10x24", 10x36", 10x52", 10x72", 12x36",
12x52", 12x120", 12x72", 16x36", 16x52", 16x72",
Landis Plain Cylindrical, m.d.
No. 50, 55, 60, 65 Heald Cylinder
8x36", 8x18", 10x18" Cincinnati Saddle Type Grind-
ers, m.d.
No. 11 Brown & Sharpe Plain Cylindrical
10x36", 10x50", 10x72", 14x72" Norton Plain Cyl. in.

MILLING MACHINES

Nos. 2, 3, 4 Cincinnati Vert., s.p.d., flanged spindle
No. 6 Reed-Prentice Improved Vertical Miller and
Die Sinker, m.d., late
No. 2 1/2 Milwaukee Vertical, s.p.d.
Nos. 4B, 6 Becker Vertical, belt
Nos. 2, 3, 4 Cincinnati Uni., s.p.d., flanged spindle
Nos. 2A Heavy, 4A Heavy Brown & Sharpe Uni-
versal, m.d.
No. 2 Brown & Sharpe Universal, cone
No. 2 Milwaukee Universal, motor in base, Timken
Bearings, dial feed
No. 3 Milwaukee Universal, motor in base, Timken
Bearings, dial feed
18", 24", 48" Cincinnati Plain Automatic, s.p.d.
18", 24" Cincinnati Duplex Automatic, m.d.
No. 3 Sundstrand Rigidmill, m.d.
48" Oesterlein Tilted Off-set, m.d., Timken Bearings,
National Standard spindle
CG6A Newton 4 spindle Continuous, m.d.
No. 33 Kempsmith Mfg.
Nos. 2, 3, 4, 5 Cincinnati Plain, s.p.d., flanged
spindle
Nos. 1 1/2, 2, 3, 4 Cincinnati Plain, cone
Nos. 4B Heavy, 5B Heavy Brown & Sharpe Plain,
m.d., p.r.t.
Nos. 1, 3 Kempsmith Plain, cone
No. 3B Milwaukee Plain, double overarm
No. 1B Milwaukee Plain, single overarm

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16"x 6" Hendey, yoke head
18"x 8" Hendey, yoke head
18"x10" Hendey, yoke head
20"x 8" American Geared Head
20"x10" American Geared Head
18-36"x16" Rahn-Larson Geared Head Sliding Bed
Extension Gap, m.d., taper
21"x10" LeBlond Geared Head, taper
30"x12" American Geared Head
36"x18" LeBlond Geared Head
36"x18" American, cone head, taper
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taper

MISCELLANEOUS

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No. 10 Beaudry Power Hammer
Norton No. 66 Dynamic Balancing Machine m.d.
No. 18H Gould & Eberhardt Gear Hobber
No. 34 Brown & Sharpe Gear Hobber, m.d.
Schuehardt & Schutte Gear Tooth Rounder
Type E American Motor Operated Pipe Bending Ma-
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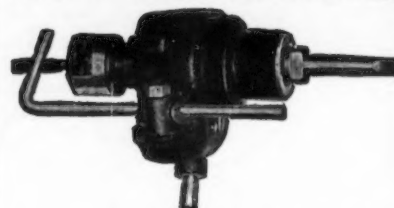
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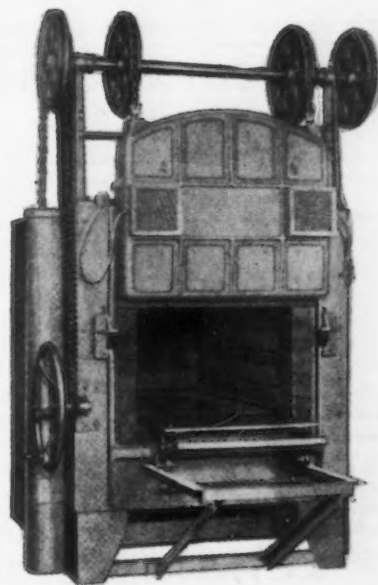
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Procurement Division, Public Buildings Branch, Washington, D. C., Sept. 14, 1936.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Oct. 20, 1936, for construction (except freight elevator) of the U. S. P. O. Etc., at St. Cloud, Minn. Attention is directed to the special conditions of bidding set forth in the specification. Upon application, two sets of drawings and specifications will be supplied free to each General Contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of \$10 per set, which will not be returned. Checks offered as payment for drawings and specifications MUST be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any Sub-contractor or material firm interested, and to quantity surveyors; but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch.

Procurement Division, Public Buildings Branch, Washington, D. C., Sept. 4, 1936.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Oct. 6, 1936, for construction of the U. S. P. O. at Sulphur, Okla. Attention is directed to the special conditions of bidding set forth in the specification. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of \$5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch.

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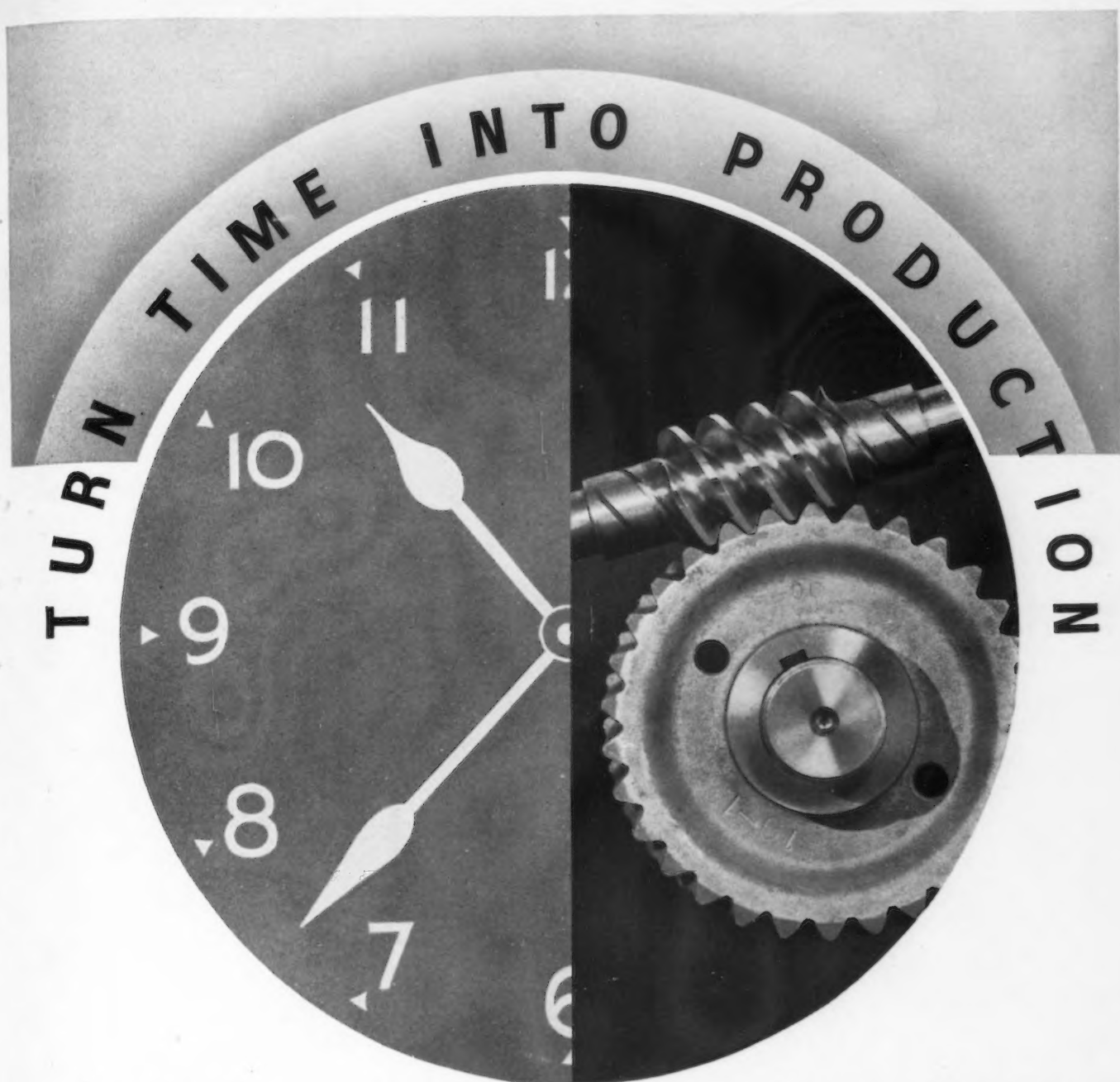
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